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MHT 780 L HT E3

Evolution

Operator Manual

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THIS OPERATOR'S MANUAL MUST BE KEPT IN THE LIFT TRUCK AND MUST BE READ AND UNDERSTOOD BY OPERATORS.

0 - ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS

1 - OPERATING & SAFETY INSTRUCTION

2 - DESCRIPTION

3 - MAINTENANCE

4 - ELECTRICAL & HYDRAULIC SCHEMATIC

5 - ATTACHMENTS

RELEASE: 01/10	Initial Release

THE TEXTS AND ILLUSTRATIONS IN THIS DOCUMENT MUST NOT BE REPRODUCED EITHER WHOLLY OR IN PART.

MHT 780 H-E3

ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS

ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS

STUDY THE OPERATOR/SERVICE MANUALS

The information in this manual provides general instructions for the safe operation and maintenance of your forklift truck. This information is vital and must be clearly understood by the operator and serviceman. Study this manual and the Rough Terrain Forklift Safety Manual (part no. 422494) thoroughly and carefully before operating or servicing your forklift. Contact your dealer or Manitou North America, Inc. if you have any questions concerning your forklift, its operation, service or parts. Keep both manuals in the literature box on the forklift available for reference. If either manual becomes illegible or is missing, contact your dealer for replacements immediately. This manual cannot cover every situation that might result in an accident. It is the responsibility of the operator to always remain alert for potential hazards and be prepared to avoid them!

ADDITIONAL RECOMMENDED LITERATURE:

ANSI / ITSDF B56.6 is the national consensus standard for rough terrain forklift trucks. It contains rules about forklift safety, maintenance, safe operation, training, and supervision. Forklift owners should learn this standard and make it available for their operators, service personnel, and supervisors. These standards can be obtained, free of charge, from the Industrial Truck Standards Development Foundation (ITSDF) on their website at www.itsdf.org. The following references are examples from the standard, addressing forklift operators:

A.) OPERATOR TRAINING QUALIFICATIONS

1.) The user shall ensure that operators understand that safe operation is the operator's responsibility. The user shall ensure that operators are knowledgeable of, and observe, all safety rules and practices.
2.) Create an effective operator training program centered around user company's policies, operating conditions, and rough terrain forklift trucks. The program should be presented completely to all new operators and not be condensed for those claiming previous experience.
3.) Information on operator training is available from several sources, including rough terrain forklift truck manufacturers, users, government agencies, etc.
4.) An operator training program should consist of the following:

a.) careful selection of the operator, considering physical qualifications, job attitude, and aptitude;
b.) emphasis on safety of stock, equipment, operator, and other personnel;
c.) citing of rules and why they were formulated;
d.) basic fundamentals of rough terrain forklift truck and component design as related to safety, e.g., in.-lb (N-m) loading, mechanical limitations, center of gravity, stability, etc.;
e.) introduction to equipment, control locations, and functions. Explain how they work when used properly and problems when used improperly.
f.) supervise practice on operating course remote from normal activity and designed to simulate actual operations, e.g., lumber stacking, elevating shingles to the roof, etc.;
g.) oral, written, and operational performance tests and evaluations during and at completion of the course;
h.) refresher courses, which may be condensed versions of the primary course, and periodic "on job" operator evaluation;
i.) understanding of nameplate data and operator instructions and warning information appearing on the rough terrain forklift truck.

B.) GENERAL SAFETY PRACTICES

1.) Rough terrain forklift trucks can cause injury if improperly used or maintained.
2.) Only authorized operators trained to adhere strictly to all operating instructions shall be permitted to operate rough terrain forklift trucks. Unusual operating conditions may require additional safety precautions, training, and special operating instructions.
3.) Modifications and additions which affect capacity or safe operation shall not be preformed without the manufacturer's prior written approval. Where such authorization is granted, capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.
4.) If the rough terrain forklift truck is equipped with front end attachment(s) or optional forks, the user shall see that the truck is marked to identify the forks or attachment(s), show the approximate weight of the truck and fork or attachment combination, and show the capacity of the truck with forks or attachment(s) at maximum elevation with load laterally centered.
5.) The user shall see that all nameplates and caution and instruction markings are in place and legible.
6.) The user shall consider that changes in load dimension may affect rough terrain forklift truck capacity.

B.) GENERAL SAFETY PRACTICES (cont.)

7.) Where steering can be accomplished with either hand and the steering mechanism is of a type that prevents road reactions from causing the handwheel to spin (power steering or equivalent), steering knobs may be used. When used, steering knobs shall be of a type that can be engaged by the operator's hand from the top and shall be within the periphery of the steering handwheel.
8.) Experience has shown that rough terrain forklift trucks which comply with stability requirements are stable when properly operated. However, improper operation, faulty maintenance, or poor housekeeping may contribute to a condition of instability and defeat the purpose of the requirements.
9.) Users shall give consideration to special operating conditions. The amount of forward and rearward tilt to be used is governed by the application. Although the use of maximum rearward tilt is allowable under certain conditions, such as traveling with the load lowered, the stability of a rough terrain forklift truck as determined by standardized tests does not encompass consideration for excessive tilt at high elevations or the operation of trucks with excessive off-center loads.
10.) Some of the conditions which may affect stability are ground and floor conditions, grade, speed, loading (rough terrain forklift trucks equipped with attachments behave as partially loaded trucks even when operated without a load on the attachment), dynamic and static forces, improper tire inflation, and the judgement exercised by the operator.

C.) OPERATING SAFETY RULES AND PRACTICES

1.) Safe operation is the responsibility of the operator.
2.) This equipment can be dangerous if not used properly. The operator shall develop safe working habits and also be aware of hazardous conditions in order to protect himself, other personnel, the rough terrain forklift truck, and other material.
3.) The operator shall be familiar with the operation and function of all controls and instruments before undertaking to operate the rough terrain forklift truck.
4.) Before operating any rough terrain forklift truck, truck operators shall have read and be familiar with the operator's manual for the particular truck being operated.
5.) Before starting to operate the rough terrain forklift truck:
    a.) be in operating position and fasten seat belt;
    b.) place directional controls in neutral;
    c.) apply brakes;
    d.) start engine.
6.) Do not start or operate the rough terrain forklift truck, any of its functions, or attachments from any place other than the designated operator's position.
7.) Keep hands and feet inside the operator's designated area or compartment. Do not put any part of the body outside the operator compartment of the rough terrain forklift truck.
8.) Never put any part of the body into the mast structure or between the mast and the rough terrain forklift truck.
9.) Never put any part of the body within the reach mechanism of the rough terrain forklift truck or other attachments.
10.) Understand rough terrain forklift limitations and operate the truck in a safe manner so as not to cause injury to personnel.
11.) Do not allow anyone to stand or pass under the elevated portion of any rough terrain forklift truck, whether empty or loaded.
12.) Do not permit passengers to ride on rough terrain forklift trucks.
13.) Check clearance carefully before driving under electrical lines, bridges, etc.
14.) A rough terrain forklift truck is attended when the operator is less than 25 ft (7.6m) from the truck, which remains in his view.
15.) A rough terrain forklift truck is unattended when the operator is 25ft (7.6m) or more from the truck, which remains in his view, or whenever the operator leaves the truck and it is not in his view.
16.) Before leaving the operator's position:
    a.) bring rough terrain forklift truck to a complete stop;
    b.) place directional controls in neutral;
    c.) apply the parking brake;
    d.) lower load-engaging means fully, unless supporting an occupied elevated platform;
    e.) stop the engine;
    f.) if the rough terrain forklift truck must be left on an incline, block the wheels;
    g.) fully lower the load-engaging means.
17.) Maintain a safe distance from the edge of ramps, platforms, and other similar working surfaces.
18.) Do no move railroad cars or trailer with a rough terrain forklift truck.

C.) OPERATING SAFETY RULES AND PRACTICES (cont.)

19.) Do not use a rough terrain forklift truck for opening or closing railroad car doors.
20.) In areas classified as hazardous, use only rough terrain forklift trucks approved for use in those areas.
21.) Report all accidents involving personnel, building structures, and equipment to the supervisor or as directed.
22.) Do not add to, or modify, the rough terrain forklift truck.
23.) Do not block access to fire aisles, stairways, and fire equipment.
24.) For rough terrain forklift trucks equipped with a differential lock, the lock should not be engaged when driving on the road or at high speeds or when turning. If the lock is engaged when turning, there could be loss of steering control.
25.) Observe all traffic regulations including authorized speed limits. Under normal traffic conditions, keep to the right, maintain a safe distance, based on speed of travel, from the truck ahead; and keep the truck under control at all times.
26.) Yield the right-of-way to pedestrians and emergency vehicles such as ambulances and fire trucks.
27.) Do not pass another truck traveling in the same direction at intersections, blind spots, or at other dangerous locations.
28.) Slow down and sound the audible warning device(s) at cross-aisles and other locations where vision is obstructed.
29.) Cross railroad tracks at an angle wherever possible. Do not park closer than 6 ft (1.8m) to the nearest rail of a railroad track.
30.) Keep a clear view of the path of travel and observe other traffic, personnel, and safe clearances.
31.) If the load being carried obstructs forward view, travel with the load trailing.
32.) Ascend or descend grades slowly and with caution.
    a.) When ascending or descending grades in excess of 5%, loaded rough terrain forklift trucks should be driven with the load upgrade.
    b.) Unloaded rough terrain forklift trucks should be operated on all grades with the load-engaging means downgrade.
    c.) On all grades, the load and load-engaging means shall be tilted back, if applicable, and raised only as far as necessary to clear the road surface.
    d.) Avoid turning, if possible, and use extreme caution on grades, ramps, or inclines; normally travel straight up or down.
33.) Under all travel conditions, operate the rough terrain forklift truck at a speed that will permit it to be brought to a stop in a safe manner.
34.) Travel with load-engaging means or load low and, where possible, tilted back. Do not elevate the load except during stacking.
35.) Make starts, stops, turns, or direction reversals in a smooth manner so as not to shift load and/or overturn the rough terrain forklift truck.
36.) Do not indulge in stunt driving or horseplay.
37.) Slow down for wet and slippery surfaces.
38.) Before driving over a dockboard or bridge plate, be sure that it is properly secured. Drive carefully and slowly across the dockboard or bridge plate, and never exceed its rated capacity.
39.) Do not drive rough terrain forklift trucks onto any elevator unless specifically authorized to do so. Approach elevators slowly, and then enter squarely after the elevator car is properly leveled. Once on the elevator, neutralize the controls, shut off engine, and set brakes. It is advisable that all other personnel leave the elevator before truck is allowed to enter or leave.
40.) Avoid running over loose objects on the roadway surface.
41.) When negotiating turns, reduce speed to a safe level, and turn steering handwheel in a smooth sweeping motion. Except when maneuvering at a very low speed, turn the steering handwheel at a moderate, even rate.
42.) Use special care when traveling without load, as the risk of lateral overturning is greater.
43.) Improper use of stabilizer controls (if so equipped) could cause rough terrain forklift truck upset. Always lower the carriage before operating stabilizer controls.
44.) For rough terrain forklift trucks equipped with lateral leveling:
    a.) Always level the frame before raising the boom or mast, with or without a load.
    b.) Lateral leveling should not be used to position an elevated load; instead, lower the load and reposition the rough terrain forklift truck.
45.) Handle only stable or safely arranged loads.
    a.) When handling off-center loads which cannot be centered, operate with extra caution.
    b.) Handle only loads within the capacity of the rough terrain forklift truck.
    c.) Handle loads exceeding the dimensions used to establish rough terrain forklift truck capacity with extra caution. Stability and maneuverability may be adversely affected.

C.) OPERATING SAFETY RULES AND PRACTICES (cont.)

46.) When attachments are used, extra care shall be taken in securing, manipulating, positioning, and transporting the load. Operate rough terrain forklift trucks equipped with attachments as partially loaded trucks when not handling a load.

47.) Completely engage the load with the load-engaging means. Fork length should be at least two-thirds of load length. Where tilt is provided, carefully tilt the load backward to stabilize the load. Caution should be used in tilting backward with high or segmented loads.

48.) Use extreme care when tilting load forward or backward, particularly when high tiering. Do not tilt forward with load-engaging means elevated except to pick up or deposit a load over a rack or stack. When stacking or tiering, use only enough backward tilt to stabilize the load.

49.) The handling of suspended loads by means of a crane arm (boom) or other device can introduce dynamic forces affecting the stability of a rough terrain forklift truck. Grades and sudden starts, stops, and turns can cause the load to swing and create a hazard if not externally stabilized. When handling suspended loads:

a.) do not exceed the truck manufacturer's capacity of the rough terrain forklift truck as equipped for handling suspended loads.

b.) only lift the load vertically and never drag it horizontally;

c.) transport the load with the bottom of the load and the mast as low as possible;

d.) with load elevated, maneuver the rough terrain forklift truck slowly and cautiously, and only to the extent necessary to permit lowering to the transport position;

e.) use tag lines to restrain load swing whenever possible.

50.) At the beginning of each shift and before operating the rough terrain forklift truck, check its condition, giving special attention to:

a.) tires and their inflation pressure

b.) warning devices

c.) lights

d.) lift and tilt systems, load-engaging means, chains, cables, and limit switches

e.) brakes

f.) steering mechanism

g.) fuel system(s)

51.) If the rough terrain forklift truck is found to be in need of repair or in any way unsafe, or if it contributes to an unsafe condition, the matter shall be reported immediately to the user's designated authority, and the truck shall not be operated until it has been restored to safe operating condition.

52.) If during operation the rough terrain forklift truck becomes unsafe in any way, the matter shall be reported immediately to the user's designated authority, and the truck shall not be operated until it has been restored to safe operating condition.

53.) Do not make repairs or adjustments unless specifically authorized to do so.

54.) When refueling, smoking in the area shall not be permitted, the engine shall be stopped, and the operator shall not be on the rough terrain forklift
truck.

55.) Spillage of oil or fuel shall be carefully and completely absorbed or evaporated and fuel tank cap replaced before restarting engine.

56.) Do not use open flames when checking electrolyte level in storage batteries, liquid level in fuel tanks, or the condition of LPG fuel lines and connectors.

57.) Do not lift personnel with the forklift. If the forklift must be used to lift people, precautions for the protection of the personnel must be taken (see ITSDF B56.6, chapter 5.15 Elevating Personnel).

D.) SUSPENDED LOADS

A jib or truss boom should ONLY be used to lift and place loads when the machine is stationary and the frame is level. Transporting suspended loads must ALWAYS be done slowly and cautiously, with the boom and load as low as possible. Use taglines to restrict loads from swinging, to avoid overturn.

The handling of suspended loads by means of a truss boom or other similar device can introduce dynamic forces affecting the stability of the machine that are not considered in the stability criteria of industry test standards. Grades and sudden starts, stops and turns can cause the load to swing and create a hazard.

Guidelines for "Free Rigging / Suspended Loads"

1. DO NOT exceed the rated capacity of the telescopic handler as equipped for handling suspended loads. The weight of the rigging must be included as part of the load.

2. During transport, DO NOT raise the load more than 12 inches (305 mm) above the ground, or raise the boom more than 45 degrees.

3. Only lift the load vertically – NEVER drag it horizontally.

4. Use multiple pickup points on the load when possible. Use taglines to restrain the load from swinging and rotating.

5. Start, travel, turn and stop SLOWLY to prevent the load from swinging. DO NOT exceed walking speed.

6. Inspect rigging before use. Rigging must be in good condition and in the U.S. comply with OSHA regulation §1910.184, "Slings," or §1926.251, "Rigging equipment for material handling."

7. Rigging equipment attached to the forks must be secured such that it cannot move either sideways or fore and aft. The load center must not exceed 24 inches (610 mm).

8. DO NOT lift the load with anyone on the load, rigging or lift equipment, and NEVER lift the load over personnel.

9. Beware of the wind, which can cause suspended loads to swing, even with taglines.

10. DO NOT attempt to use frame-leveling to compensate for load swing.

WARNING

U.S. OSHA regulations effective November 8, 2010 (29 CFR Part 1926, Subpart CC - Cranes and Derricks in Construction) include requirements for employers that use powered industrial trucks ("forklifts") configured to hoist (by means of a winch or hook) and move suspended loads horizontally. In particular, this regulation applies to any rough-terrain forklift (e.g., "telescopic handler") equipped with a jib or truss boom with a hook (with or without a winch), or a hook assembly attached to the forks. [Note: This regulation is in addition to the OSHA regulation that requires specific forklift operator training: §1910.178(l).]

When a forklift / telescopic handler is configured and used for hoisting, the employer must ensure that:

1. **Forklift, lift equipment and rigging have been inspected (each shift, month and year) and are in good, safe condition and properly installed.**

2. **An operator's manual and applicable load charts are on the forklift.**

3. **Work zone ground conditions can support the equipment and load. Any hazardous conditions in the work area have been identified, and the operator notified.**

4. **Equipment is being used within its rated capacity and in accordance with the manufacturer's instructions.**

5. **Operator and crew members have been trained in the safe use and operation of the equipment, including how to avoid electrocution.**

6. **During use, no part of the equipment, load line or load will be within the minimum clearance distance specified by OSHA [10 feet (3.0 m), and more for lines rated over 50 kV] of any energized power line, and any taglines used are non-conductive.**

7. **In addition, for lift equipment with a rated capacity greater than 2000 lbs. (907 kg), the employer must ensure that:**

a.) An accessible fire extinguisher is on the forklift;

b.) Monthly and annual inspections are performed and documented, and records retained (three months for monthly, one year for annual);

c.) Before November 10, 2014, operators must have had the additional training and qualification / certification required by OSHA regulations §1926.1427 and §1926.1430.

Note: Refer to the full text of the OSHA crane regulation (29 CFR Part 1926, Subpart CC) for a detailed description

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CONCLUSION:

1.) ATTEND OPERATOR TRAINING CLASSES

The forklift operator must clearly understand all instructions concerning the safe operation of the forklift and all safety rules and regulations of the work site. They must have successfully completed a training coarse in accordance with the Powered Industrial Truck Standard (29 CFR 1910.178) as described by the Occupational Safety and Health Administration (OSHA). They must be qualified as to their visual, hearing, physical, and mental ability to operate the equipment safely. NEVER use drugs or alcohol while operating a forklift! NEVER operate or allow anyone to operate a forklift when mental alertness or coordination is impaired! An operator on prescription or over-the-counter drugs must consult a medical professional regarding any side effects of the medication that may impair their ability to safely operate the forklift.

2.) CREATE A MAINTENANCE PROGRAM

OSHA recommends a maintenance log, listing repairs requested and completed, for each forklift. Also, “lock out tag procedures” should be utilized. If the forklift malfunctions; park it safely, remove the key, tag “Do Not Use”, and report the problem to the proper authority or authorized service personnel immediately.

ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS (cont.)

2.) CREATE A MAINTENANCE PROGRAM (cont.)

For the best forklift performance and operation, a maintenance program is required. Use the hour meter on the instrument panel to keep maintenance properly scheduled (see SECTION TWO - “Servicing Schedule”). For repairs on major components (engine, transmission, etc.), contact your nearest dealer for a Repair Manual. Do not operate a forklift that is damaged or does not function properly. Only authorized personnel may make repairs or adjustments to the lift truck. After repairs, the lift truck must be tested for safe operation before returning to service.

3.) FORKLIFT KNOWLEDGE

Forklift trucks can cause serious injury if improperly used or maintained. Study all of the manuals provided for your forklift model. Learn the locations and meanings of all safety decals. If any decals are illegible or missing, have them replaced immediately. Make sure all safety features provided by the original manufacturer are in place and function properly. Do not operate a forklift with damaged, missing or unsafe components. Have it repaired by authorized service personnel. Learn the functions of all controls, gauges, indicator lights, etc. on the forklift. Know the speed/gear ranges, braking and steering capabilities, load ratings and clearances. When referring to the location of forklift components, the terms “left”, “right”, “front”, and “rear” are related to the operator seated normally, facing forward in the operator’s seat. If you have any questions about the forklift, consult your supervisor. Failure to fully understand or obey safety warnings can result in serious injury or death!

4.) WORK SITE KNOWLEDGE

Before operating on a work site, learn the rules for movement of people, forklifts and all other traffic. Check the size, weight, and condition of the loads you will be expected to handle. Verify that they are properly secured and safe to transport. Learn where the loads are to be placed, planning your route for a safe approach, watching for hazardous conditions. Will a signal man be required to help place the load? Remove any debris which may cause tire damage or rupture. Plan your route around problem areas or have them corrected. Inform the supervisor of any unsafe conditions observed at the site. Examples of hazards: power lines, cables, low clearance structures, garage doors, telephone pole guide lines, fencing, loose lumber, building materials, drop-offs, trenches, rough/soft spots, oil spills, deep mud, steep inclines, railroad tracks, curbs, etc.. NEVER approach power lines, gas lines or other utilities with the forklift! Always verify that local, state/provincial and federal regulations have been met. Report any accidents involving personnel, building structures, and equipment to the supervisor immediately. Always remain alert - conditions are constantly changing at the work site!

TECHNICAL SUPPORT

All data provided in this manual is subject to production changes, addition of new models, and improved product designs. If a question arises regarding your forklift, please consult your dealer or Manitou NA, Inc. for the latest information. When ordering service parts or requesting technical information, be prepared to quote the applicable Model/Serial Numbers.

SAFETY MESSAGES

NOTE THE SAFETY ALERT SYMBOL (SHOWN BELOW). IT IDENTIFIES POTENTIAL HAZARDS WHICH, IF NOT AVOIDED MAY RESULT IN INJURY OR DEATH! Also, observe the safety messages places throughout this manual; providing special instructions, telling you when to take precautions and to identify potential hazards. The safety messages are highlighted and outlined in a box similar to those shown in the examples below.

SAFETY ALERT SYMBOL

NOTE or NOTICE
Provides information, special instructions or references about the lift truck.

IMPORTANT
Precautions which must be taken to avoid damage to the lift truck.

CAUTION
Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. May also alert unsafe practices.

WARNING
Indicates a potentially hazardous situation which, if not avoided, *may result in death or serious injury!*

DANGER
Indicates an imminently hazardous situation which, if not avoided, *will result in death or serious injury.*

CALIFORNIA PROPOSITION 65 WARNING

Diesel Engine Exhaust and some of its constituents are known to the State of California to cause cancer, birth defects or other reproductive harm.

WARNING: Battery posts, terminals and related accesories and related accessories contain lead and lead compounds. **Wash hands after handling.**

SAFETY DECALS

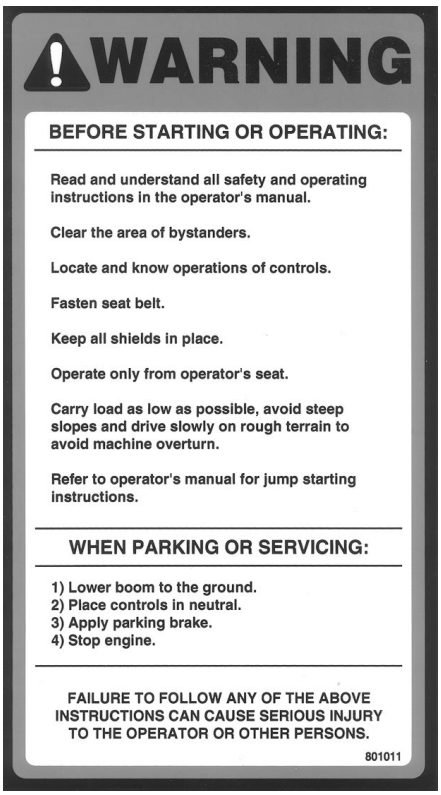
The purpose of this chapter is to introduce you to the safety messages, decals, and nameplates found on your forklift truck. The decals are identified by name, part number, location, and a brief description. (The forklift model logos, and other misc. decals not shown, can be found in your forklift parts manual.) The decals illustrated may not be exactly the same as those installed on your forklift; installation of the decals varies depending on the forklift model, series, decal updates, etc.. The size and location of some decals limit the amount of information that can be placed upon it. For this reason, additional detailed information not found on the decals is provided through-out this manual.

Every decal placed on the lift truck is important; they are constant reminders of safety and instructions that should never be taken for granted. Even experienced operators can be seriously injured or killed by ignoring, refusing to enforce, or forgetting to follow safe operating procedures! Do not assume you know all safety issues concerning the decals. Before operating the lift truck; learn the meaning(s) of the decals as described in this manual. If any decal becomes illegible or missing, have it replaced immediately! Always replace decals using the same decal part no., unless otherwise specified by the manufacturer. For replacement decals not found in your parts manual, contact your nearest dealer. If you have any questions, contact your supervisor or nearest dealer for advice before operating your forklift!

801011

Before Starting - 801011

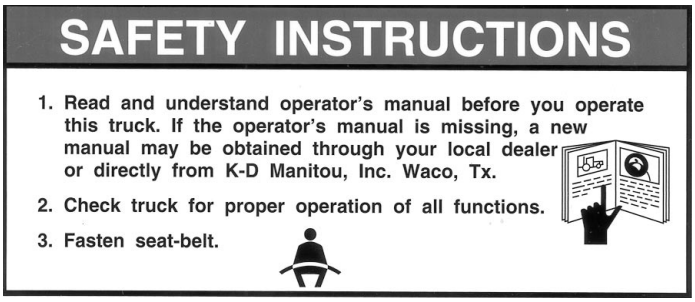
(Boom equipped models). Location: on the brake fluid cover panel (to the left and below the dash panel).


WARNING
BEFORE STARTING OR OPERATING:
Read and understand all safety and operating instructions in the operator's manual.
Clear the area of bystanders.
Locate and know operations of controls.
Fasten seat belt.
Keep all shields in place.
Operate only from operator's seat.
Carry load as low as possible, avoid steep slopes and drive slowly on rough terrain to avoid machine overturn.
Refer to operator's manual for jump starting instructions.
WHEN PARKING OR SERVICING:
1) Lower boom to the ground.
2) Place controls in neutral.
3) Apply parking brake.
4) Stop engine.
FAILURE TO FOLLOW ANY OF THE ABOVE INSTRUCTIONS CAN CAUSE SERIOUS INJURY TO THE OPERATOR OR OTHER PERSONS.
801011

Safety Instructions - 420792

(Mast equipped models). Location: on or near the operator manual storage case, and/or on the dash panel.

Instructions for the forklift operator; before operating the forklift.


SAFETY INSTRUCTIONS
1. Read and understand operator's manual before you operate this truck. If the operator's manual is missing, a new manual may be obtained through your local dealer or directly from K-D Manitou, Inc. Waco, Tx.
2. Check truck for proper operation of all functions.
3. Fasten seat-belt.

Use of Seat Belt - 801012

(Boom equipped models). Location: to the right of the operator, near the hydraulic control lever.

Instructs the operator to always wear the seat belt during operations, and never jump from an over-turning forklift.

DANGER
Always wear seat belt when operating machine.
Never jump from a tipping machine.
Failure to comply may result in serious injury or death.
801012

Alarm Must Sound - 496162

Location: on the dash, in direct view of the operator.

The backup alarm must sound when the forklift is placed in reverse gear.

No Riders - 420732

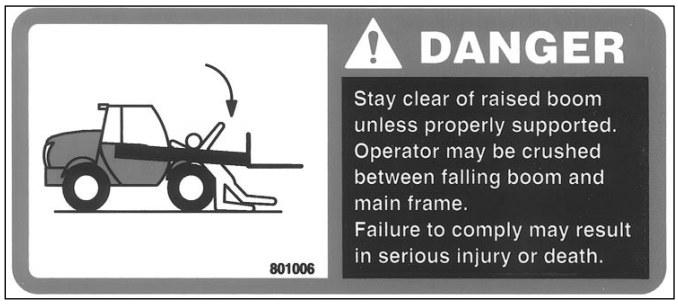
Location: on the cab entrance(s), and on or near wheel fenders and engine cover.

Informs: riders are not allowed on the forklift.

Clear of Raised Boom - 801006

(Boom equipped models). Location: on both sides of the boom nose.

Keep away from unsupported boom.


DANGER
Stay clear of raised boom unless properly supported. Operator may be crushed between falling boom and main frame.
Failure to comply may result in serious injury or death.
801006

Clear of Power Lines - 801007

(Boom equipped models). Location: on both sides of the boom nose.

Keep away from power lines.

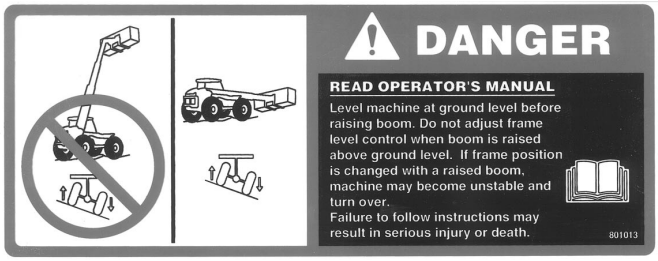
DANGER
Keep machine at least 25 feet from overhead power lines.
Failure to comply may result in serious injury or death by electrocution.
801007

SAFETY DECALS

Use of Frame Leveling - 801013

(Boom equipped models). Location: to the right of the operator near the hydraulic control lever.

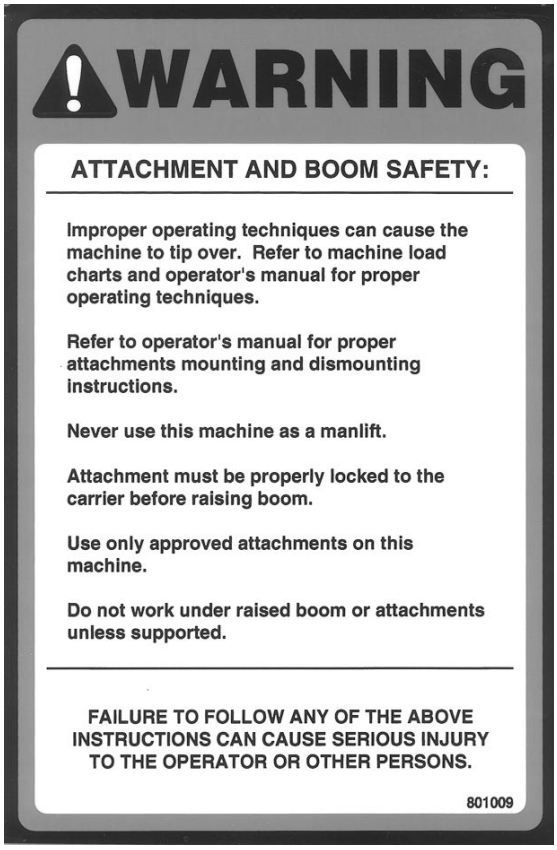
Frame leveling notice; load must be lowered.


DANGER
READ OPERATOR'S MANUAL
Level machine at ground level before raising boom. Do not adjust frame level control when boom is raised above ground level. If frame position is changed with a raised boom, machine may become unstable and turn over.
Failure to follow instructions may result in serious injury or death.
801013

Attachment and Boom Safety - 801009

(Boom equipped models). Location: on both sides of the boom nose.

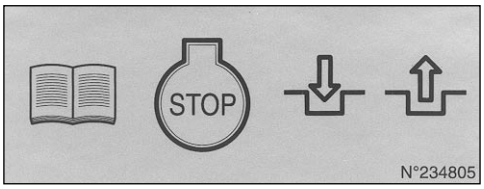
Important reminders of attachment and boom safety.


WARNING
ATTACHMENT AND BOOM SAFETY:
Improper operating techniques can cause the machine to tip over. Refer to machine load charts and operator's manual for proper operating techniques.
Refer to operator's manual for proper attachments mounting and dismounting instructions.
Never use this machine as a manlift.
Attachment must be properly locked to the carrier before raising boom.
Use only approved attachments on this machine.
Do not work under raised boom or attachments unless supported.
FAILURE TO FOLLOW ANY OF THE ABOVE INSTRUCTIONS CAN CAUSE SERIOUS INJURY TO THE OPERATOR OR OTHER PERSONS.
801009

Hydraulic Coupling - 234805

Location: near the quick-disconnect adapters.

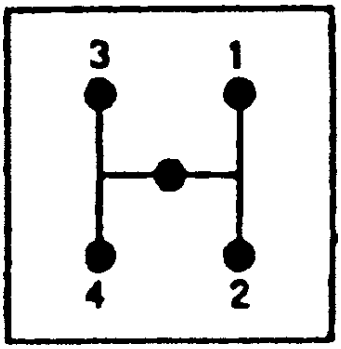
Stop the engine and release hydraulic pressure before changing attachments.



Rotating Fan and Belt(s) - 801008

Location: on the radiator near the fan, and on any fan belt/pulley cover(s).

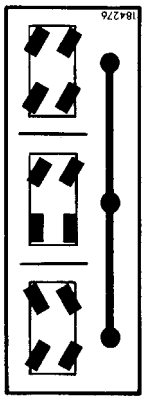
Keep hands and clothing away from rotating fan and belts.



Gear Shift Pattern - 61039

(4-speed transmission models). Location: near the gear shift lever.

Identifies the gear shift pattern of the forklift transmission.



Steering Mode - 184276

(4 wheel steer equipped models). Location: near the steering mode selection lever.

Identifies the steering mode selection.

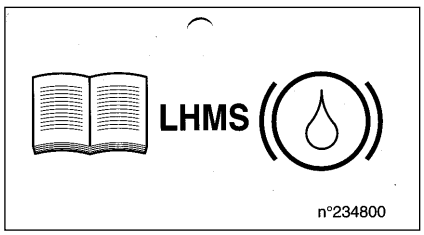
221322

Mineral Oil (Brake Reservoir) - 221322 or 234800 has been replaced by 164091.

Location: near the brake fluid reservoir where applicable.

Refer to the Operator/Service Manual for the correct brake fluid (mineral oil) to be used in the brake system.

234800

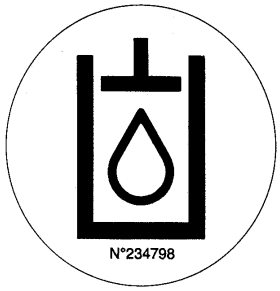


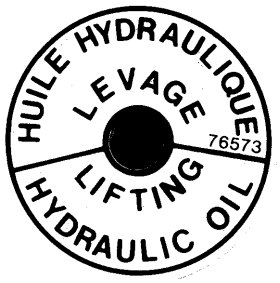
SAFETY DECALS

Hydraulic Oil - 234798 or 76573

Location: on the hydraulic tank or filler cap.

Identifies the hydraulic reservoir (tank) or filler cap.





Hydraulic Oil - 61024

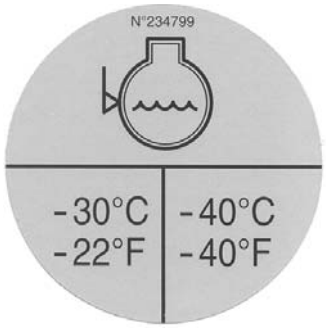
Location: on the hydraulic tank.

Identifies the hydraulic reservoir (tank).

Anti-Freeze - 234799

Location: on the radiator, near the radiator filler cap.

Indicates required minimum to maximum anti-freeze protection (-22^{0}F to -40^{0}F).



Diesel Fuel - 161101

Location: on the fuel tank, near the filler cap.

Identifies the fuel tank, and use of diesel fuel.

No Step - 496735

Location: varies, depending on the forklift model.

Instructs personnel not to use the designated area as a step.

Do Not Tow - 494918

(Hydrostatic equipped models). Location: on the dash, in view of the operator.

Towing the forklift will damage the transmission; refer to the operator's manual.

WARNING
THIS VEHICLE IS EQUIPPED WITH A HYDROSTATIC TRANSMISSION. DO NOT ATTEMPT TO PUSH OR TOW, TRANSMISSION DAMAGE WILL OCCUR. SEE OPERATOR'S MANUAL.
494918

SAFETY DECALS

Attachment Warning - 421016

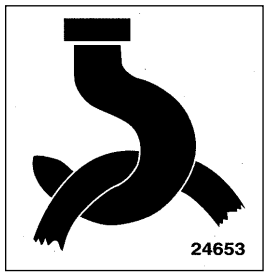
(Boom equipped models). Location: on the boom coupler, near where the retaining shaft is installed.

Reminder to operator; install attachment retaining shaft and safety pin before operations.

WARNING
THE ATTACHMENT RETAINING SHAFT MUST BE IN PLACE AND SECURED WITH THE SAFETY SNAP PIN BEFORE TRUCK OPERATION.
421016

Hook Here - 24653

Location: at points provided on the forklift, where straps or chains may be attached to secure the forklift to a trailer during transport.



Fork Safety - 426641

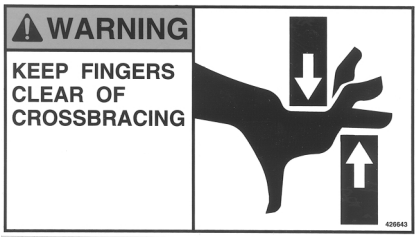
(Mast equipped models). Location: on the front and back side of the mast's outer rails, at eye level (4 required).

Instructs personnel not to travel beneath or upon the lift truck forks.

Pinch Point, Large, 2.5 x 4.5 in. - 426643
Pinch Point, Small, 1.5 x 2.75 in. - 426642

(Mast equipped models). Location: on the front and rear sides of the mast cross bracing.

Keep fingers away from the mast crossbracing.



HAND THROTTLE DANGER - 804784

(Boom equipped models, option). Location: Near the hand throttle mechanism.

Reminder to operator; set parking brake before operating hand throttle. Disengage hand throttle before leaving the forklift.

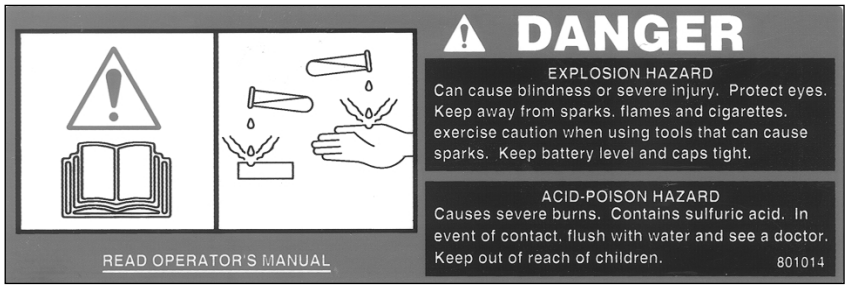
DANGER
DISENGAGE HAND THROTTLE BEFORE LEAVING TRUCK.
OPERATE HAND THROTTLE ONLY WITH PARKING BRAKE SET.
FAILURE TO COMPLY MAY RESULT IN SERIOUS INJURY OR DEATH.
804784

SAFETY DECALS

Acid in Battery - 801014

Location: in or near the battery storage compartment.

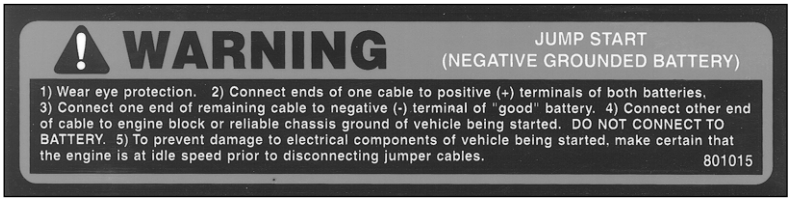
Addresses battery hazards.


DANGER
EXPLOSION HAZARD
Can cause blindness or severe injury. Protect eyes. Keep away from sparks, flames and cigarettes. exercise caution when using tools that can cause sparks. Keep battery level and caps tight.
ACID-POISON HAZARD
Causes severe burns. Contains sulfuric acid. In event of contact, flush with water and see a doctor. Keep out of reach of children.
801014
READ OPERATOR'S MANUAL

Jump Start Battery - 801015

Location: in or near the battery storage compartment.

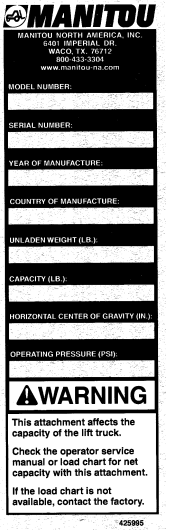
Jump start instructions.


WARNING
JUMP START
(NEGATIVE GROUNDED BATTERY)
1) Wear eye protection. 2) Connect ends of one cable to positive (+) terminals of both batteries. 3) Connect one end of remaining cable to negative (-) terminal of "good" battery. 4) Connect other end of cable to engine block or reliable chassis ground of vehicle being started. DO NOT CONNECT TO BATTERY. 5) To prevent damage to electrical components of vehicle being started, make certain that the engine is at idle speed prior to disconnecting jumper cables.
801015

Attachment Plate - 425995

Location: on the optional removeable forklift attachment.

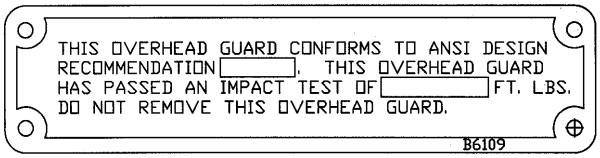
Important manufacturer information about the attachment. Record this information for use when contacting the maufacturer for parts and service.



Overhead Guard Data Plate - B6109

Location: attached to the overhead guard.

Overhead guard conformity.


THIS OVERHEAD GUARD CONFORMS TO ANSI DESIGN RECOMMENDATION [ ]. THIS OVERHEAD GUARD HAS PASSED AN IMPACT TEST OF [ ] FT. LBS.
DO NOT REMOVE THIS OVERHEAD GUARD.
B6109

Forklift Data Plate - 496550

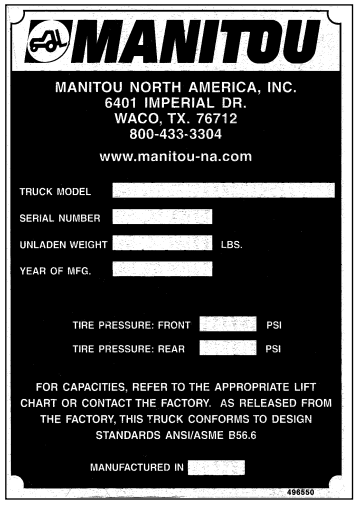
(Boom equipped models)

Forklift Data Plate - 283688

Location: within the operator's compartment.

Important forklift truck identification. Record this information for use when contacting the manufacturer for parts and service.

496550



283688

1 - OPERATING AND SAFETY INSTRUCTIONS

TABLE OF CONTENTS

INSTRUCTIONS TO THE COMPANY MANAGER 1 - 4

THE SITE **1 - 4**
THE OPERATOR **1 - 4**
THE LIFT TRUCK **1 - 4**
A - THE LIFT TRUCK'S SUITABILITY FOR THE JOB 1 - 4
B - ADAPTATION OF THE LIFT TRUCK TO STANDARD ENVIRONMENTAL CONDITIONS 1 - 4
C - MODIFICATION OF THE LIFT TRUCK 1 - 5
D - FRENCH ROAD TRAFFIC RULES (or see current legislation in other countries) 1 - 5
THE INSTRUCTIONS **1 - 5**
THE MAINTENANCE **1 - 5**

INSTRUCTIONS FOR THE OPERATOR 1 - 6

PREAMBULE **1 - 6**
GENERAL INSTRUCTIONS **1 - 6**
A - OPERATOR'S MANUAL 1 - 6
B - AUTHORIZATION FOR USE IN FRANCE (or see current legislation in other countries) 1 - 6
C - MAINTENANCE 1 - 6
D - MODIFICATION OF THE LIFT TRUCK 1 - 6
E - LIFTING PEOPLE 1 - 7
OPERATING INSTRUCTIONS UNLADEN AND LADEN **1 - 8**
A - BEFORE STARTING THE LIFT TRUCK 1 - 8
B - DRIVER'S OPERATING INSTRUCTIONS 1 - 8
C - ENVIRONMENT 1 - 9
D - VISIBILITY 1 - 9
E - STARTING THE LIFT TRUCK 1 - 10
F - DRIVING THE LIFT TRUCK 1 - 10
G - STOPPING THE LIFT TRUCK 1 - 11
H - DRIVING THE LIFT TRUCK ON THE PUBLIC HIGHWAY (or see current legislation in other countries) 1 - 12
INSTRUCTIONS FOR HANDLING A LOAD **1 - 14**
A - CHOICE OF ATTACHMENTS 1 - 14
B - MASS OF LOAD AND CENTRE OF GRAVITY 1 - 14
C - LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE 1 - 14
D - TRANSVERSE ATTITUDE OF THE LIFT TRUCK 1 - 15
E - TAKING UP A LOAD ON THE GROUND 1 - 15
F - TAKING UP AND LAYING A HIGH LOAD ON TYRES 1 - 16
G - TAKING UP AND LAYING DOWN A SUSPENDED LOAD 1 - 18
H - TRAVELLING WITH A SUSPENDED LOAD 1 - 18
PLATFORM OPERATING INSTRUCTIONS ***1 - 19***
A - AUTHORISATION FOR USE 1 - 19
B - SUITABILITY OF THE PLATFORM FOR THE JOB 1 - 19
C - PRECAUTIONS WHEN USING THE PLATFORM 1 - 19
D - USING THE PLATFORM 1 - 19
E - ENVIRONMENT 1 - 20
F - MAINTENANCE 1 - 20
INSTRUCTIONS FOR USING THE RADIO-CONTROL ***1 - 21***

MAINTENANCE INSTRUCTIONS OF THE LIFT TRUCK 1 - 22

GENERAL INSTRUCTIONS ***1 - 22***
MAINTENANCE ***1 - 22***
LUBRICANT AND FUEL LEVELS ***1 - 22***
HYDRAULIC ***1 - 22***
ELECTRICITY ***1 - 22***
WELDING ***1 - 23***
WASHING THE LIFT TRUCK ***1 - 23***

IF THE LIFT TRUCK IS NOT TO BE USED FOR A LONG TIME 1 - 24

INTRODUCTION ***1 - 24***
PREPARING THE LIFT TRUCK ***1 - 24***
PROTECTING THE I.C. ENGINE ***1 - 24***
PROTECTING THE LIFT TRUCK ***1 - 24***
BRINGING THE LIFT TRUCK BACK INTO SERVICE ***1 - 25***

INSTRUCTIONS TO THE COMPANY MANAGER

THE SITE

- Proper management of lift truck's area of travel will reduce the risk of accidents:
  . ground not unnecessarily uneven or obstructed,
  . no excessive slopes,
  . pedestrian traffic controlled, etc.

THE OPERATOR

- Only qualified, authorized personnel can use the lift truck. This authorization is given in writing by the appropriate person in the establishment with respect to the use of lift trucks and must be carried permanently by the operator.

On the basis of experience, there are a number of possible situations in which operating the lift truck is contra-indicated. Such foreseeable abnormal uses, the main ones being listed below, are strictly forbidden.

- The foreseeable abnormal behaviour resulting from ordinary neglect, but does not result from any wish to put the machinery to any improper use.
- The reflex reactions of a person in the event of a malfunction, incident, fault, etc. during operation of the lift truck.
- Behaviour resulting from application of the «principle of least action» when performing a task.
- For certain machines, the foreseeable behaviour of such persons as: apprentices, teenagers, handicapped persons, trainees tempted to drive a lift truck, operator tempted to operate a truck to win a bet, in competition or for their own personal experience.
The person in charge of the equipment must take these criteria into account when assessing whether or not a person will makea suitable driver.

THE LIFT TRUCK

A - THE TRUCK'S SUITABILITY FOR THE JOB

- MANITOU has ensured that this liftruck is suitable for use under the standard operating conditions defined in this operator's manual, in accordance with **ASME B56.6 - 2002**
- Before commissioning, the company manager must make sure that the lift truck is appropriate for the work to be done, and perform certain tests (in accordance with current legislation).

B - ADAPTATION OF THE LIFT TRUCK TO STANDARD ENVIRONMENTAL CONDITIONS

- In addition to series equipment mounted on your lift truck, many options are available, such as: road lighting, stop lights, flashing light, reverse lights, reverse buzzer alarm, front light, rear light, light at the jib head, etc... (as model of liftruck).
- The operator must take into account the operating conditions to define the lift truck's signalling and lighting equipment. Contact your dealer.
- Take into account climatic and atmospheric conditions of the site of utilisation.
  . Protection against frost (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL).
  . Adaptation of lubricants (ask your dealer for information).
  . I.C. engine filtration (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).

For operation under average climatic conditions, i.e.: between - 15 °C and + 35 °C, correct levels of lubricants in all the circuits are checked in production. For operation under more severe climatic conditions, before starting up, it is necessary to drain all the circuits, then ensure correct levels of lubricants using lubricants properly suited to the relevant ambient temperatures. It is the same for the cooling liquid.

- A lift truck operating in an area without ife extinguishing equipment must be equipped with an individual extinguisher. There are solutions, consult your dealer.

Your lift truck is designed for outdoor use under normal atmospheric conditions and indoor use in suitably aerated and ventilated premises. It is prohibited to use the lift truck in areas where there is a risk of fire or which are potentially explosive (e.g. Refineries, fuel or gas depots, stores of inflammable products...). For use in these areas, specific equipment is available (ask your dealer for information).

- Our trucks comply with Directive 2004/108/EC concerning electromagnetic compatibility (EMC), and with the corresponding harmonized norm EN 12895. Their proper operation is no longer guaranteed if they are used within areas in which the electromagnetic fields exceed the limit specified by that norm (10 V/m).
- Directive 2002/44/EC requires company managers to not expose their employees to excessive vibration doses. There is no recognized code of measurement for comparing the machines of different manufacturers. The actual doses received can therefore be measured only under actual operating conditions at the user's premises.
- The following are some tips for minimizing these vibration doses:
  - Select the most suitable liftruck and attachment for the intended use.
  - Adapt the seat adjustment to the operator's weight (according to lift truck model) and maintain it in good condition, as well as the cab suspension. Inflate the tires in accordance with recommendations.
  - Ensure that the operators adapt their operating speed to suit the conditions on site.
  - As far as possible, arrange the site in such a way as to provide a flat running surface and remove obstacles and harmful potholes.

C - MODIFICATION OF THE LIFT TRUCK

- For your safety and that of others, you must not change the structure and settings of the various components used in your lift truck (hydraulic pressure, calibrating limiters, I.C. engine speed, addition of extra equipment, addition of counterweight, unapproved attachments, alarm systems, etc.) yourself. In this event, the manufacturer cannot be held responsible.

D - FRENCH ROAD TRAFFIC RULES

(or see current legislation in other countries)

- Only one certificate of conformity is issued. It must be kept in a safe place.

THE INSTRUCTIONS

- The operator's manual must always be in good condition and kept in the place provided on the lift truck and in the language used by the operator.
- The operator's manual and any plates or stickers which are no longer legible or are damaged, must be replaced immediately.

THE MAINTENANCE

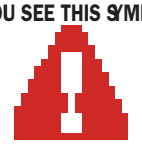
- Maintenance or repairs other than those detailed in part 3 - MAINTENANCE must be carried out by qualified personnel (consult your dealer) and under the necessary safety conditions to maintain the health of the operator and any third party.

Your lift truck must be inspected periodically to ensure that it remains in compliance. The frequency of this inspection is defined by current legislation in the country in which the lift truck is used.

INSTRUCTIONS FOR THE OPERATOR

PREAMBLE

WHENEVER YOU SEE THIS SYMBOL IT MEANS:



WARNING ! BE CAREFUL ! YOUR SAFETY OR THE SAFETY OF THE LIFT TRUCK IS AT RISK.

The risk of accident while using, servicing or repairing your lift truck can be restricted if you follow the safety instructions and safety measures detailed in these instruction.

- Only the operations and manœuvres described in these operator's manual must be performed. The manufacturer cannot predict all possible risky situations. Consequently, the safety instructions given in the operator's manual and on the lift truck itself are not exhaustive.
- At any time, as an operator, you must envisage, within reason, the possible risk to yourself, to others or to the lift truck itself when you use it.

Failure to respect the safety and operating instructions, or the instructions for repairing or servicing your lift truck may lead to serious, even fatal accident.

GENERAL INSTRUCTIONS

A - OPERATOR'S MANUAL

- Read the operator's manual carefully
- The operator's manual must always be in good condition and in the place provided for it on the lift truck.
- You must report any plates and stickers which are no longer legible or which are damaged.

B - AUTHORISATION FOR USE IN FRANCE

(or see current legislation in other countries)

- Only qualified, authorized personnel can use the lift truck. This authorization is given in writing by the appropriate person in the establishment with respect to the use of lift trucks and must be carried permanently by the operator.
- The operator is not competent to authorise the driving of the lift truck by another person.

C - MAINTENANCE

- The operator must immediately advise his superior if his lift truck is not in good working order or does not comply with the safety notice.
- The operator is prohibited from carrying out any repairs or adjustments himself, unless he has been trained for this purpose. He must keep the lift truck properly cleaned if this is among his responsibilities.
- The operator must carry out daily maintenance (see: 3 - MAINTENANCE: A - DAILY OR EVERY 10 HOURS SERVICE).
- The operator must ensure tyres are adapted to the nature of the ground (see area of the contact surface of the tyres in the chapter: 2 - DESCRIPTION: FRONT AND REAR TYRES). There are optional solutions, consult your dealer.
  - . SAND tyres.
  - . LAND tyres.
  - . Snow chains.

Do not use the lift truck if the tyres are incorrectly inflated, damaged or excessively worn, because this could put your own safety or that of others at risk, or cause damage to the lift truck itself. The fitting of foam inflated tyres is prohibited and is not guaranteed by the manufacturer, excepting prior authorisation.

D - MODIFICATION OF THE LIFT TRUCK

- For your safety and that of others, you must not change the structure and settings of the various components used in your lift truck (hydraulic pressure, calibrating limiters, I.C. engine speed, addition of extra equipment, addition of counterweight, unapproved attachments, alarm systems, etc.) yourself. In this event, the manufacturer cannot be held responsible.

E - LIFTING PEOPLE

- The use of working equipment and load lifting attachments to lift people is:
  - either forbidden
  - or authorized exceptionally and under certain conditions (see current regulations in the country in which the lift truck is used).
- The pictogram posted at the operator station reminds you that:
  - Left-hand column
  - It is forbidden to lift people, with any kind of attachment, using a non PLATFORM-fitted lift truck.
  - Right-hand column
  - With a PLATFORM-fitted lift truck, people can only be lifted using platforms designed by MANITOU for the purpose.
- MANITOU sells equipment specifically designed for lifting people (OPTION PLATFORM lift truck, contact your dealer).

A - BEFORE STARTING THE LIFT TRUCK

- Carry out daily maintenance (see: 3 - MAINTENANCE: A - DAILY OR EVERY 10 HOURS SERVICE).
- Make sure the lights, indicators and windscreen wipers are working properly.
- Make sure the rear view mirrors are in good condition, clean and properly adjusted.
- Make sure the horn works.

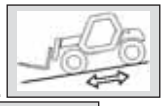
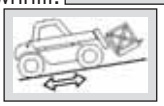
B - DRIVER'S OPERATING INSTRUCTIONS

- Whatever his experience, the operator is advised to familiarize himself with the position and operation of all the controls and instruments before operating the lift truck.
- Wear clothes suited for driving the lift truck, avoid loose clothes.
- Make sure you have the appropriate protective equipment for the job to be done.
- Prolonged exposure to high noise levels may cause hearing problems. It is recommended to wear ear muffs to protect against excessive noise.
- Always face the lift truck when getting into and leaving the driving seat and use the handle(s) provided for this purpose. Do not jump out of the seat to get down.
- Always pay attention when using the lift truck. Do not listen to the radio or music using headphones or earphones.
- Never operate the lift truck when hands or feet are wet or soiled with greasy substances.
- For increased comfort, adjust the seat to your requirements and adopt the correct position in the driver's cab.

Under no circumstances must the seat be adjusted while the lift truck is moving.

- The operator must always be in his normal position in the driver's cab. It is prohibited to have arms or legs, or generally any part of the body, protruding from the driver's cab of the lift truck.
- The safety belt must be worn and adjusted to the operator's size.
- The control units must never in any event be used for any other than their intended purposes (e.g. climbing on to or down from the lift truck, portmanteau, etc.).
- If the control components are fitted with a forced operation (lever lock) device, it is forbidden to leave the cab without first putting these controls in neutral.
- It is prohibited to carry passengers either on the lift truck or in the cab.

C - ENVIRONMENT

- Comply with site safety regulations.
- If you have to use the lift truck in a dark area or at night, make sure it is equipped with working lights.
- During handling operations, make sure that no one is in the way of the lift truck and its load.
- Do not allow anybody to come near the working area of the lift truck or pass beneath an elevated load.
- When using the lift truck on a transverse slope, before lifting the jib, follow the instructions given in the paragraph: INSTRUCTIONS FOR HANDLING A LOAD: D - TRANSVERSE ATTITUDE OF THE LIFT TRUCK.
- Travelling on a longitudinal slope:
  - Drive and brake gently.
  - Moving without load: Forks or attachment facing downhill. 
  - Moving with load: Forks or attachment facing uphill. 
- Take into account the lift truck's dimensions and its load before trying to negotiate a narrow or low passageway.
- Never move onto a loading platform without having first checked:
  - That it is suitably positioned and made fast.
  - That the unit to which it is connected (wagon, lorry, etc.) will not shift.
  - That this platform is prescribed for the total weight of the lift truck to be loaded.
  - That this platform is prescribed for the size of the lift truck.
- Never move onto a foot bridge, floor or freight lift, without being certain that they are prescribed for the weight and size of the lift truck to be loaded and without having checked that they are in sound working order.
- Be careful in the area of loading bays, trenches, scaffolding, soft land and manholes.
- Make sure the ground is stable and firm under the wheels and/or stabilizers before lifting or removing the load. If necessary, add sufficient wedging under the stabilizers.
- Make sure that the scaffolding, loading platform, pilings or ground is capable of bearing the load.
- Never stack loads on uneven ground, they may tip over.

If the load or the attachment must remain above a structure for a long time, there is the risk that it will rest on the structure because of the jib descending owing to the oil in the cylinders cooling down.

To eliminate this risk:

- Regularly check the distance between the load or the attachment and the structure and readjust this if necessary.

- If possible use the lift truck at an oil temperature as close as possible to ambient temperature.

- In the case of work near aerial lines, ensure that the safety distance is sufficient between the working area of the lift truck and the aerial line.

You must consult your local electrical agency. You could be electrocuted or seriously injured if you operate or park the lift truck too close to power cables.

In the event of high winds, do not carry out handling work that jeopardizes the stability of the lift truck and its load, particularly if the load catches the wind badly.

D - VISIBILITY

- The safety of people within the lift truck's working area, as well as that of the lift truck itself and the operator are depend on good operator visibility of the lift truck's immediate vicinity in all situations and at all times.
- This lift truck has been designed to allow good operator visibility (direct or indirect by means of rear-view mirrors) of the immediate vicinity of the lift truck while traveling with no load and with the jib in the transport position.
- Special precautions must be taken if the size of the load restricts visibility towards the front:
  - moving in reverse,
  - site layout,
  - assisted by a person directing the maneuver (while standing outside the truck's area of travel), making sure to keep this person clearly in view at all times.
  - in any case, avoid reversing over long distances.
- Certain special accessories may require the truck to travel with the jib in the raised position. In such cases, visibility to the right hand side is restricted, and special precautions must be taken:
  - site layout,
  - assisted by a person directing the maneuver (while standing outside the truck's area of travel).
- If visibility of your road is inadequate, ask someone to assist by directing the maneuver (while standing outside the trucks' area of travel), making sure to keep this person clearly in view at all times.
- Keep all components affecting visibility in a clean, properly adjusted state and in good working order (e.g. windscreens, windows, windscreen wipers, windscreen washers, driving and work lights, rear-view mirrors).

E - STARTING THE LIFT TRUCK

SAFETY INSTRUCTIONS

The lift truck must only be started up or maneuvered when the operator is sitting in the driver's cab, with his seat belt adjusted and fastened.

- Never try to start the lift truck by pushing or towing it. Such operation may cause severe damage to the transmission. If necessary, to tow the lift truck in an emergency the transmission must be placed in the neutral position (see: 3 - MAINTENANCE: G - OCCASIONAL MAINTENANCE).
- If using an emergency battery for start-up, use a battery with the same characteristics and respect battery polarity when connecting it. Connect at first the positive terminals before the negative terminals.

Failure to respect polarity between batteries can cause serious damage to the electrical circuit. The electrolyte in the battery may produce an explosive gas. Avoid flames and generation of sparks close to the batteries. Never disconnect a battery while it is charging.

INSTRUCTIONS

- Check the closing and locking of the hood(s).
- Check that the cab door is closed.
- Check that the forward/reverse selector is in neutral.
- Turn the ignition key to the position I to activate the electrical system and the preheat.
- Whenever you switch on the lift truck, perform the automatic check on the longitudinal stability limiter and warning device system (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS). Do not use the lift truck if it does not conform to the regulations.
- Check the fuel level on the indicator.
- Turn the ignition key fully: the I.C. engine should then start. Release the ignition key and let the I.C. engine run at idle
- Do not engage the starter motor for more than 15 seconds and carry out the preheating between unsuccessful attempts.
- Make sure all the signal lights on the control instrument panel are off.
- Check all control instruments when the I.C. engine is warm and at regular intervals during use, so as to quickly detect any faults and to be able to correct them without any delay.
- If an instrument does not show the correct display, stop the I.C. engine and immediately carry out the necessary operations.

F - DRIVING THE LIFT TRUCK

SAFETY INSTRUCTIONS

Operators' attention is drawn to the risks involved in using the lift truck, in particular:
- Risk of losing control.
- Risk of losing lateral and frontal stability of the lift truck.
The operator must remain in control of the lift truck.
In the event of the lift truck overturning, do not try to leave the cabin during the incident. YOUR BEST PROTECTION IS TO STAY FASTENED IN THE CABIN.

- Observe the company's traffic regulations or, by default, the public highway code.
- Do not carry out operations which exceed the capacities of your lift truck or attachments.
- Always drive the lift truck with the forks or attachment to the transport position, i.e. at 300mm from the ground, the jib retracted and the carriage sloping backwards.
- Only carry loads which are balanced and properly anchored to avoid any risk of a load falling off.
- Ensure that palettes, cases, etc, are in good order and suitable for the load to be lifted.
- Familiarise yourself with the lift truck on the terrain where it will be used.
- Ensure that the service brakes are working properly.
- The loaded lift truck must not travel at speeds in excess of 12 km/h.
- Drive smoothly at an appropriate speed for the operating conditions (land configuration, load on the lift truck).
- Do not use the hydraulic jib controls when the lift truck is moving.
- Never change the steering mode whilst driving.
- Do not manoeuvre the lift truck with the jib in the raised position unless under exceptional circumstances and then with extreme caution, at very low speed and using gentle braking. Ensure that visibility is adequate.
- Take bends slowly.
- In all circumstances make sure you are in control of your speed.
- On damp, slippery or uneven terrain, drive slowly.
- Brake gently, never abruptly.
- Only use the lift truck's forward/reverse selector from a stationary position and never do so abruptly
- Do not drive with your foot on the brake pedal.
- Always remember that hydrostatic type steering is extremely sensitive to movement of the steering wheel, so turn it gently and not jerkily.
- Never leave the I.C. engine on when the liftruck is unattended.
- Do not leave the cab when the lift truck has a raised load.
- Look where you are going and always make sure you have good visibility along the route.

- Use the rear-view mirrors frequently.
- Drive round obstacles.
- Never drive on the edge of a ditch or steep slope.
- It is dangerous to use two lift trucks simultaneously to handle heavy or voluminous loads, since this operation requires particular precautions to be taken. It must only be used exceptionally and after risk analysis.
- The ignition switch has an emergency stop mechanism in case of an operating anomaly occurring in the case of lift trucks not fitted with a punch-operated cut-out.

INSTRUCTIONS
- Always drive the lift truck with the forks or attachment in the transport position, i.e. at 300 mm from the ground, the jib retracted and the carriage sloping backwards.
- For lift trucks with gearboxes, use the recommended gear (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS).
- Select the steering mode appropriate for its use and/or working conditions (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS) (as model of lift truck).
- Release the parking brake.
- Shift the forward/reverse selector to the selected direction of travel and accelerate gradually until the lift truck moves off.

G - STOPPING THE LIFT TRUCK

SAFETY INSTRUCTIONS
- Never leave the ignition key in the lift truck during the operator's absence.
- When the lift truck is stationary, or if the operator has to leave his cab (even for a moment), place the forks or attachment on the ground, apply the parking brake and place the forward/reverse selector in neutral.
- Make sure that the lift truck is not stopped in any position that will interfere with the traffic flow and at less than one meter from the track of a railway.
- In the event of prolonged parking on a site, protect the lift truck from bad weather, particularly from frost (check the level of antifreeze), close and lock all the lift truck accesses (doors, windows, cowls...).

INSTRUCTIONS
- Park the lift truck on flat ground or on an incline lower than 15 %.
- Set the forward/reverse selector to neutral.
- Apply the parking brake.
- For lift trucks with gearboxes, place the gear lever in neutral.
- Retract entirely the jib.
- Lower the forks or attachment to rest on the ground.
- When using an attachment with a grab or jaws, or a bucket with hydraulic opening, close the attachment fully
- Before stopping the lift truck after a long working period, leave the I.C. engine idling for a few moments, to allow the coolant liquid and oil to lower the temperature of the I.C. engine and transmission. Do not forget this precaution, in the event of frequent stops or warm stalling of the I.C. engine, or else the temperature of certain parts will rise significantly due to the stopping of the cooling system, with the risk of badly damaging such parts.
- Stop the I.C. engine with the ignition switch.
- Remove the ignition key.
- Lock all the accesses to the lift truck (doors, windows, cowls...).

H - DRIVING THE LIFT TRUCK ON THE PUBLIC HIGHWAY

(or see current legislation in other countries)

SAFETY INSTRUCTIONS

- Operators driving on the public highway must comply with current highway code legislation.
- The lift truck must comply with current road legislation. If necessary, there are optional solutions. Contact your dealer.

INSTRUCTIONS

- Make sure the revolving light is in place, switch it on and verify its operation.
- Make sure the lights, indicators and windscreen wipers are working properly.
- Switch off the working headlights if the lift truck is fitted with them.
- Select the steering mode “HIGHWAY TRAFFIC” (as model of lift truck) (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS).
- Retract entirely the jib and put the attachment at 300 mm from the ground.
- Place the slope correctors in the central position, i.e. the transverse shaft of the axles parallel to the chassis (as model of lift truck).
- Lift up the stabilizers to the maximum and turn the blocks inwards (as model of lift truck).

Never move in neutral (forward/reverse selector or gear lever in neutral or transmission cut-off button pressed) to preserve the lift truck engine brake. Failure to respect this instruction on a slope will lead to excessive speed which may make the lift truck uncontrollable (steering, brakes) and cause serious mechanical damage.

DRIVING THE LIFT TRUCK WITH A FRONT-MOUNTED ATTACHMENT

- You must comply with current regulations in your country, covering the possibility of driving on the public highway with a front-mounted attachment on your lift truck.
- If road legislation in your country authorizes circulation with a front-mounted attachment, you must at least:
    - Protect and report any sharp and/or dangerous edges on the attachment (see: 4 - ADAPTABLE ATTACHMENTS IN OPTION ON THE RANGE: ATTACHMENT SHIELDS).
    - The attachment must not be loaded.
    - Make sure that the attachment does not mask the lighting range of the forward lights.
    - Make sure that current legislation in your country does not require other obligations.

OPERATING THE LIFT TRUCK WITH A TRAILER

- For using a trailer, observe the regulations in force in your country (maximum travel speed, braking, maximum weight of trailer, etc.).
- Do not forget to connect the trailer's electrical equipment to that of the lift truck.
- The trailer's braking system must comply with current legislation.
- If pulling a trailer with assisted braking, the tractor lift truck must be equipped with a trailer braking mechanism. In this case, do not forget to connect the trailer braking equipment to the lift truck.
- The vertical force on the towing hook must not exceed the maximum authorised by the manufacturer (consult the manufacturer's plate on your lift truck).
- The authorised gross vehicle weight must not exceed the maximum weight authorised by the manufacturer (see: 2 - DESCRIPTION: CHARACTERISTICS).

IF NECESSARY, CONSULT YOUR DEALER.

A - CHOICE OF ATTACHMENTS

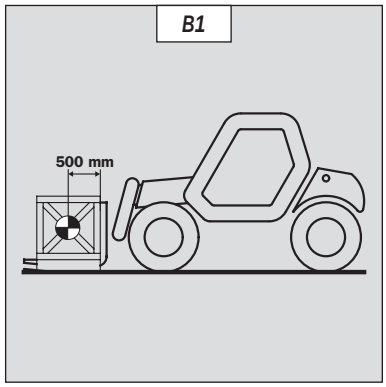
- Only attachments approved by MANITOU can be used on its lift trucks.
- Make sure the attachment is appropriate for the work to be done (see: 4 - ADAPTABLE ATTACHMENTS IN OPTION ON THE RANGE).
- If the lift truck is equipped with the Single side-shift carriage OPTION (TSDL), use only the authorised attachments (see: 4 - ADAPTABLE ATTACHMENTS IN OPTION ON THE RANGE).
- Make sure the attachment is correctly installed and locked onto the lift truck carriage.
- Make sure that your lift truck attachments work properly.
- Comply with the load chart limits for the lift truck for the attachment used.
- Do not exceed the rated capacity of the attachment.
- Never lift a load in a sling without the attachment provided for the purpose, as the sling risks to slip (see: INSTRUCTIONS FOR HANDLING A LOAD: H - TAKING UP AND LAYING DOWN A SUSPENDED LOAD).

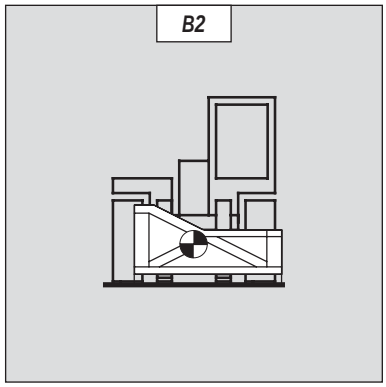
B - MASS OF LOAD AND CENTRE OF GRAVITY

- Before taking up a load, you must know its mass and its centre of gravity.
- The load chart for your lift truck is valid for a load in which the longitudinal position of the centre of gravity is 500 mm from the base of the forks (fig. B1). For a higher centre of gravity, contact your dealer.
- For irregular loads, determine the transverse centre of gravity before any movement (fig. B2) and set it in the longitudinal axis of the lift truck.

It is forbidden to move a load heavier than the effective capacity defined on the lift truck load chart.

For loads with a moving centre of gravity (e.g. liquids), take account of the variations in the centre of gravity in order to determine the load to be handled and be vigilant and take extra care to limit these variations as far as possible.





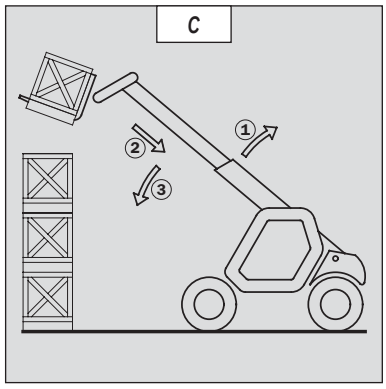
C - LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE

This device gives an indication of the longitudinal stability of the lift truck, and limits hydraulic movements in order to ensure this stability at least under the following operating conditions:

- when the lift truck is at a standstill,
- when the lift truck is on firm, stable and consolidated ground,
- when the lift truck is performing handling and placing operations.

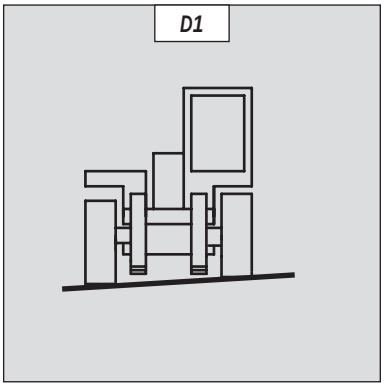
- Move the jib very carefully when approaching the authorized load limit (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS).
- Always watch this device during handling operations.
- In the event that "AGGRAVATING" hydraulic movements are cut-off, only perform de-aggravating hydraulic movements in the following order (fig. C): if necessary, raise the jib (1), retract the jib as far as possible (2) and lower the jib (3) to set down the load.

The instrument reading may be erroneous when the steering is at its maximum limit or the rear axle oscillated to its limit. Before lifting a load, make sure that the lift truck is not in either of these situations.



D - TRANSVERSE ATTITUDE OF THE LIFT TRUCK

Depending on the model of lift truck



The transverse attitude is the transverse slope of the chassis with respect to the horizontal. Raising the jib reduces the lift truck's lateral stability. The transverse attitude must be set with the jib in down position as follows:

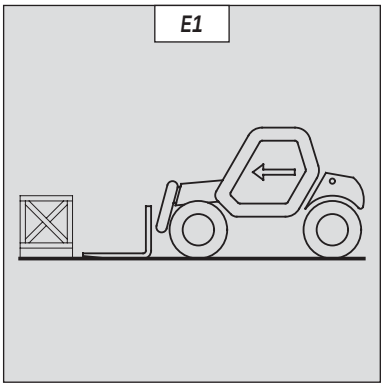
1 - LIFT TRUCK WITHOUT SLOPE CORRECTOR USED ON TYRES

- Position the lift truck so that the bubble in the level is between the two lines (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS).

2 - LIFT TRUCK WITH SLOPE CORRECTOR USED ON TYRES

- Correct the slope using the hydraulic control and verify the horizontality via the level. The bubble in the level must be between the two lines (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS).

E - TAKING UP A LOAD ON THE GROUND

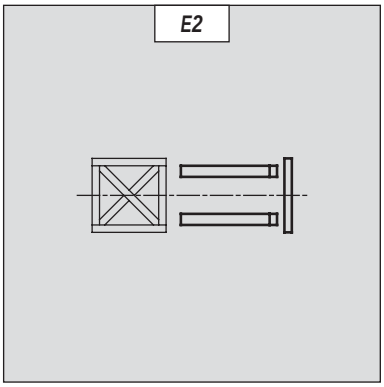


- Approach the lift truck perpendicular to the load, with the jib retracted and the forks in a horizontal position (fig. E1).
- Adjust the fork spread and centering in connection with the load (fig. E2) (optional solutions exist, consult your dealer).
- Never lift a load with a single fork.

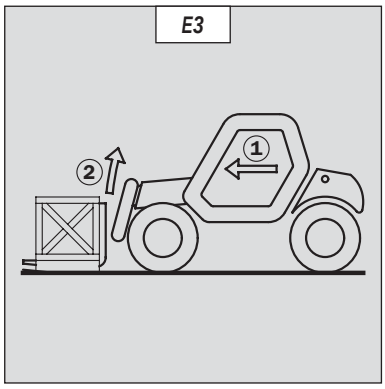
Beware of the risks of trapping or squashing limbs when manually adjusting the forks.

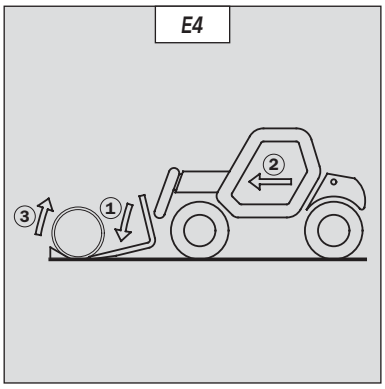
- Move the lift truck forward slowly (1) and bring the forks to stop in front of the load (fig. E3), if necessary, slightly lift the jib (2) while taking up the load.
- Bring the load into the transport position.
- Tilt the load far enough backwards to ensure stability (loss of load on braking or going downhill).

FOR A NON-PALLETIZED LOAD



- Tilt the carriage (1) forwards and move the lift truck slowly forwards (2), to insert the fork under the load (fig. E4) (block the load if necessary).
- Continue to move the lift truck forwards (2) tilting the carriage (3) (fig. E4) backwards to position the load on the forks and check the load's longitudinal and lateral stability.





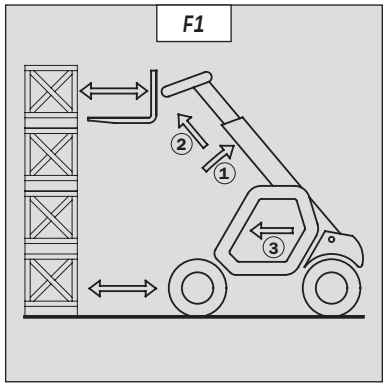
F - TAKING UP AND LAYING A HIGH LOAD ON TYRES

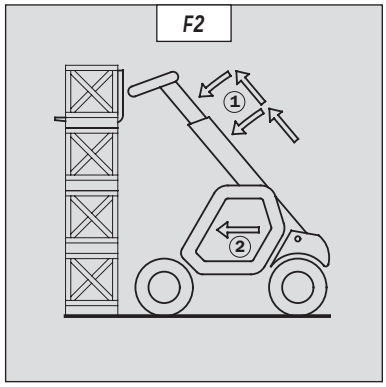
You must not raise the jib if you have not checked the transverse attitude of the lift truck (see: INSTRUCTIONS FOR HANDLING A LOAD: D - TRANSVERSE ATTITUDE OF THE LIFT TRUCK).

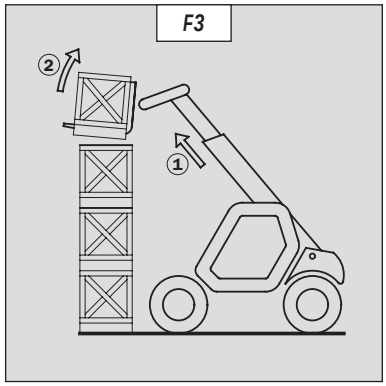
REMINDER: Make sure that the following operations can be performed with good visibility (see: OPERATIONS INSTRUCTIONS UNLADEN AND LADEN: D - VISIBILITY).

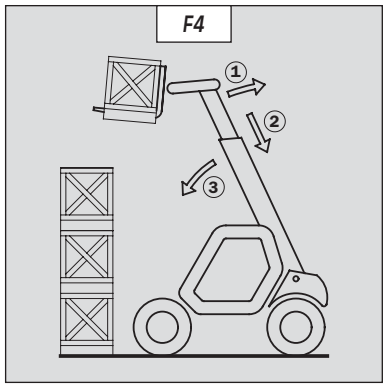
TAKING UP A HIGH LOAD ON TYRES

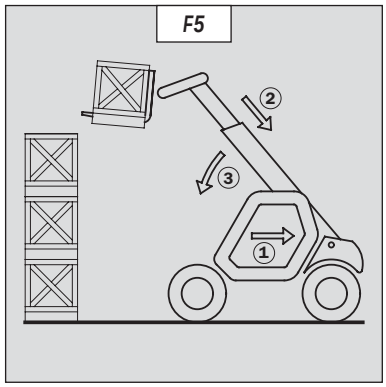
- Ensure that the forks will easily pass under the load.
- Lift and extend the jib (1) (2) until the forks are level with the load, moving the lift truck (3) forward if necessary (fig. F1), moving very slowly and carefully.
- Always think about keeping the distance necessary to fit the forks under the load, between the pile and the lift truck (fig. F1) and use the shortest possible length of jib.
- Stop the forks in front of the load by alternately extending and retracting the jib (1) or, if necessary, moving the lift truck forward (2) (fig. F2). Put the handbrake on and set the forward/reverse selector to neutral.
- Slightly lift the load (1) and incline the carriage (2) backwards to stabilize the load (fig. F3).
- Tilt the load sufficiently backwards to ensure its stability
- Watch the longitudinal stability limiter and warning device (see: INSTRUCTIONS FOR HANDLING A LOAD: C - LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE). If it is overloaded, replace the load in the place from which it was taken.
- If possible lower the load without shifting the lift truck. Lift the jib (1) to release the load, retract (2) and lower the jib (3) to bring the load into the transport position (fig. F4).
- If this is not possible, back up the liftruck (1), manoeuvring very gently and carefully to release the load. Retract (2) and lower the jib (3) to bring the load into the transport position (fig. F5).





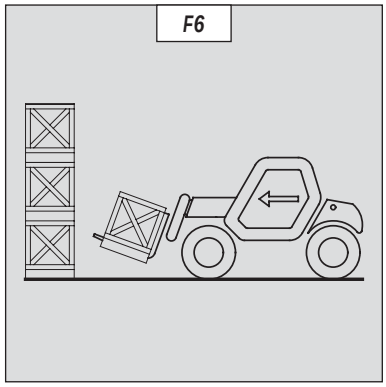


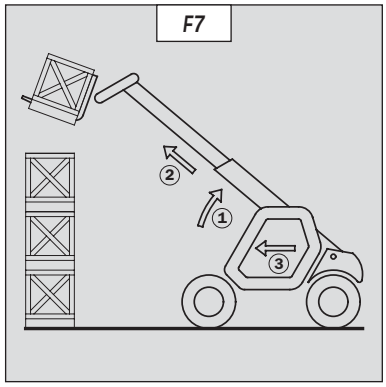


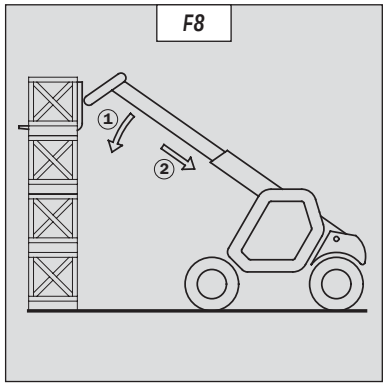


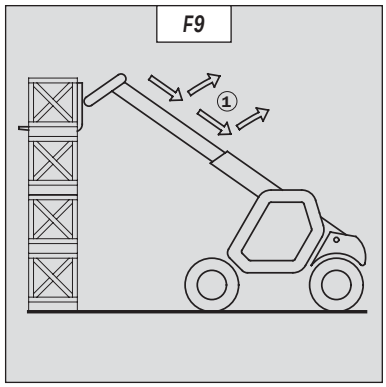
LAYING A HIGH LOAD ON TYRES

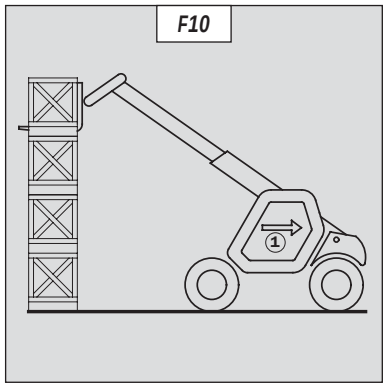
- Approach the load in the transport position in front of the pile (fig. F6).
- Put the handbrake on and set the forward/reverse selector to neutral.
- Lift and extend the jib (1) (2) until the load is above the pile, while keeping an eye on the longitudinal stability limiter and warning device (see: INSTRUCTIONS FOR HANDLING A LOAD: C - LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE). If necessary, move the lift truck (3) forward (fig. F7), driving very slowly and carefully.
- Place the load in a horizontal position and lay it down on the pile by lowering and retracting the jib (1) (2) in order to position the load correctly (fig. F8).
- If possible, release the fork by alternately retracting and raising the jib (1) (fig. F9). Then set the forks into transport position.
- If this is not possible, reverse the lift truck (1) very slowly and carefully to release the forks (fig. F10). Then set them into transport position.











G - TAKING UP AND LAYING DOWN A SUSPENDED LOAD

WARNING: Failure to follow the above instructions may lead the lift truck to loose stability and overturn.

MUST be used with a lift truck equipped with an operational hydraulic movement cut-out device.

CONDITIONS OF USE
- The length of the sling or the chain shall be as short as possible to limit swinging of the load.
- Lift the load vertically along its axis, never by pulling sideways or lengthways.

HANDLING WITHOUT MOVING THE LIFT TRUCK
- Whether on stabilisers or on tyres, the lateral attitude must not exceed 1 % and the longitudinal attitude must not exceed 5%, the bubble of the level must be held at “0”.
- Ensure that the wind speed is not higher than 10 m/s.
- Ensure that there is no one between the load and the lift truck.

H - TRAVELLING WITH A SUSPENDED LOAD
- Before moving, inspect the terrain in order to avoid excessive slopes and cross-falls, bumps and potholes, or soft ground.
- Ensure that the wind speed is not higher than 10 m/s.
- The lift truck must not travel at more than 0.4 m/s (1.5 km/h, i.e., one quarter walking speed).
- Drive and stop the lift truck gently and smoothly to minimise swinging of the load.
- Carry the load a few centimetres above the ground (max. 30 cm) the shortest possible jib length. Do not exceed the offset indicated on the load chart. If the load begins to swing excessively, do not hesitate to stop and lower the jib to set down the load.
- Before moving the lift truck, check the longitudinal stability limiter and warning device (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS), only the green LEDs and possibly the yellow LEDs should be lit.
- During transport, the lift truck operator must be assisted by a person on the ground (standing a minimum of 3 m from the load), who will limit swinging of the load using a bar or a rope. Ensure that this person is always clearly in view.
- The lateral attitude must not exceed 5%, the bubble in the level must be kept between the two “MAX.” marks
- The longitudinal attitude must not exceed 15%, with the load facing uphill, and 10%, with the load facing downhill.
- The jib angle must not exceed 45°.
- If the first red LED of the longitudinal stability limiter and warning device (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS) comes on while travelling, gently bring the lift truck to a stop and stabilise the load. Retract the telescope to reduce the offset of the load.

Installation of the platform on the lift truck is only possible if the shields "operating the platform" of the lift truck and the platform are identical (see: 2 - DESCRIPTION: OPERATING THE PLATFORM).

A - AUTHORISATION FOR USE

- Operation of the platform requires further authorisation in addition to that of the lift truck.

B - SUITABILITY OF THE TRUCK FOR USE

- MANITOU has ensured that this liftruck is suitable for use under the standard operating conditions defined in this operator's manual, with a **STATIC test coefficient of 1.25** and a **DYNAMIC test coefficient of 1.1**, as specified in harmonised standard **EN 280** for "mobile elevating work platforms".
- Before commissioning, the company manager must make sure that the platform is appropriate for the work to be done, and peform certain tests (in accordance with current legislation).

C - PRECAUTIONS WHEN USING THE PLATFORM

- Wear clothes suited for operating the platform, avoid loose clothes.
- Never operate the platform when hands or feet are wet or soiled with greasy substances.
- Always pay attention when using the platform. Do not listen to the radio or music using headphones or earphones.
- For increased comfort, adopt the correct position at the platform's operator station.
- The platform's guard rail exempts the operator from wearing a safety harness under normal operating conditions. As a result, you are responsible deciding whether to wear a safety harness.
- The controls must not be used for any other than their intended purpose (e.g. getting in and out of the liftruck, coat hanger etc.).
- Safety helmets must be worn.
- The operator must always be in the normal operator's position. It is prohibited to have arms or legs, or generally any part of the body, protruding from the basket.
- Ensure that any materials loaded onto the platform (pipes, cables, containers, etc.) cannot fall out. Do not pile these materials to the point where it is necessary to step over them.

D - USING THE PLATFORM

- However experienced they may be, operators must acquaint themselves with the emplacement and operation of all control instruments prior to operating the platform.
- Check before operating that the platform has been correctly assembled and locked onto the lift truck.
- Check before operating the platform that the access gate has been properly locked.
- The platform should be operated in an area free of any obstructions or danger when it is lowered to the ground.
- The operator using the platform must be aided on the ground by a person with adequate training.
- You should stay within the limits set out in the platform load chart.
- The lateral stresses are limited pressure (see: 2 - DESCRIPTION: CHARACTERISTICS).
- It is strictly forbidden to hand a load from the platform or the lift truck jib without a specially designed attachment (see INSTRUCTIONS FOR HANDLING A LOAD: H - TAKING UP AND LAYING DOWN A SUSPENDED LOAD).
- The platform cannot be used as a crane or a liftfor permanently transporting people or materials, nor as jacks or supports.
- The lift truck must not be moved with one (or more) person(s) in the platform.
- It is forbidden to transport people on the platform using the hydraulic controls in the lift truck's driver's cab (except in case of rescue).
- The operator must not get in or out of the platform when it is not on ground level (jib retracted and in the down position).
- The platform must not be fitted with attachments that increase the unit's wind load.
- Do not use ladders or improvised structures in the platform to gain extra height.
- Do not climb onto the sides of the platform to gain extra height.

E - ENVIRONMENT

Operating the platform close to electricity cables is forbidden. Maintain the specified safe distances.

NOMINAL VOLTAGE	DISTANCE ABOVE THE GROUND OR THE FLOOR IN METRES
50 < U < 1000	2,30 M
1000 < U < 30000	2,50 M
30000 < U < 45000	2,60 M
45000 < U < 63000	2,80 M
63000 < U < 90000	3,00 M
90000 < U < 150000	3,40 M
150000 < U < 225000	4,00 M
225000 < U < 400000	5,30 M
400000 < U < 750000	7,90 M

Operation of the platform is strictly forbidden in the event of wind speeds of over 45 km/h.

- The following scale is given for an empiric evaluation of the wind speed:

BEAUFORT scale (wind speed at a height of 10 m from flat ground)						
Force	**Type of wind**	**Speed (knots)**	**Speed (kph)**	**Speed (m/s)**	**Effects on Land**	**Sea condition**
0	Calm	**0 - 1**	**0 - 1**	**< 0,3**	Smoke rises vertically.	Sea like a mirror.
1	Light air	**1 - 3**	**1 - 5**	**0,3 - 1,5**	The wind bends the smoke.	Ripples but without foam crests.
2	Light breeze	**4 - 6**	**6 - 11**	**1,6 - 3,3**	The wind can be felt on the face, shakes the leaves.	Small but evident wavelets.
3	Gentle breeze	**7 - 10**	**12 - 19**	**3,4 - 5,4**	The wind continuously shakes the leaves and twigs.	Large wavelets Perhaps scattered white horses.
4	Moderate breeze	**11 - 16**	**20 - 28**	**5,5 - 7,9**	The wind raises dust and scraps of paper, shakes the twigs.	Small waves. Fairly frequent white horses.
5	Fresh breeze	**17 - 21**	**29 - 38**	**8 - 10,7**	Leafy shrubs sway.	Small waves form on inland waters. Moderate waves, many white horses.
6	Strong breeze	**22 - 27**	**39 - 49**	**10,8 - 13,8**	Shakes thick branches, metal wires hum, it becomes difficult to keep an umbrella open.	Large waves begin to form, white foam crests, probably spray.
7	Near gale	**28 - 33**	**50 - 61**	**13,9 - 17,1**	Whole trees sway, it is difficult to walk against the wind.	Sea heaps up and white foam blown in streaks along the direction of the wind.
8	Gale	**34 - 40**	**62 - 74**	**17,2 - 20,7**	Breaks the branches of trees, it is almost impossible to walk against the wind.	Moderately high waves, crests begin to break into spindrift.
9	Strong gale	**41 - 47**	**75 - 88**	**20,8 - 24,4**	Causes slight damage to buildings (stacks, tiles, etc..).	High waves. Dense foam along the direction of the wind. Crests of waves begin to roll over. Spray may affect visibility.
10	Storm	**48 - 55**	**89 - 102**	**24,5 - 28,4**	Rare inland, uproots trees, causes considerable damage to buildings.	Very high waves with long overhanging crests. Visibility affected.
11	Violent storm	**56 - 63**	**103 - 117**	**28,5 - 32,6**	Very rare, causes extensive devastation.	Exceptionally high waves that may hide medium sized ships. Visibility affected.
12	Hurricane	**64 +**	**118 +**	**32,7 +**	Causes very serious catastrophes.	The air is filled with foam and spray. Sea completely white with driving spray. Visibility very seriously affected.

F - MAINTENANCE

Your platform must be periodically inspected to ensure its continued compliance. The inspection frequency is defined by the current legislation in the country in which the platform is used.

HOW TO USE THE RADIO-CONTROL

SAFETY INSTRUCTIONS

- This radio-control consists of electronic and mechanical safety elements. It cannot receive commands from another transmitter because the internal encoding is unique to each radio-control.

If it is used improperly or incorrectly, there is a risk of danger to:
- The physical and mental health of the user or others.
- The lift truck and other neighbouring items.

Everyone working with this radio-control:
- Must be qualified in line with current regulations and therefore appropriately trained.
- Must follow this instruction manual as closely as possible.

- The system is used to control the lift truck remotely via radio waves. Commands are also transmitted if the lift truck is out of sight (behind an obstacle or a building for example), this is why:
  - After stopping the truck and removing the key button (only possible when it is stationary), always place the transmitter in a safe, dry place.
  - Before performing any installation, servicing or repair work, always switch off power sources (in particular, electric welding devices and electric head units on hydraulic distributors must be disconnected at each section).
  - Never remove or alter the safety devices (such as the hand-guard frame, key, emergency stop button, etc.).

Never drive the lift truck if it is not continuously and perfectly within view of the operator!

- Before leaving the transmitter, the operator must make sure that it cannot be used by an unauthorized third person: either by removing the key button from the transmitter or locking it in an inaccessible place.
- The user must ensure that the instruction manual is accessible at all times and that operators have read and understood it.

INSTRUCTIONS

- Take up position in a stable place with no risk of slipping.
- Before using the transmitter, make sure there is nobody within the working area.
- Only use the transmitter with its carrying device or installed correctly on the platform.

When you remove the transmitter, remove the accumulator and key button so that it cannot be used accidentally or deliberately by anyone else.

PROTECTIVE DEVICES

- The lift truck will be immobilised within 450 milliseconds (approx. 0.5 second) at most:
  - If the transmitter emergency stop button (50 milliseconds), or the one on the lift is pressed.
  - If the transmission distance of the radio waves is exceeded.
  - If the transmitter is faulty.
  - If an interfering radio signal is received from elsewhere.
  - If the accumulator is removed from its housing in the transmitter.
  - If the accumulator reaches the end of its autonomy.
  - If the transmitter is switched off by turning the key button to stop.
- These protective devices are provided for the safety of personnel and property and must never be altered, removed or bypassed in any way whatsoever!
- The hand-guard frame prevents external action on a manipulator (if the transmitter falls, for example, or if the operator leans on a guard-rail).
- An electronic safety device prevents radio transmission from being initiated if the manipulators are not mechanically and electrically at rest and if the internal combustion engine speed selector is not set to idle.

In an emergency, press the transmitter emergency stop button immediately ; then follow the manual's instructions (see: 2 - DESCRIPTION: INSTRUMENTS AND CONTROLS).

MAINTENANCE INSTRUCTIONS OF THE LIFT TRUCK

GENERAL INSTRUCTIONS

- Ensure the area is sufficiently ventilated before starting the lift truck.
- Wear clothes suitable for the maintenance of the lift truck, avoid wearing jewellery and loose clothes. Tie and protect your hair, if necessary.
- Stop the I.C. engine and remove the ignition key, when an intervention is necessary.
- Read the operator's manual carefully
- Carry out all repairs immediately, even if the repairs concerned are minor
- Repair all leaks immediately, even if the leak concerned is minor
- Make sure that the disposal of process materials and of spare parts is carried out in total safety and in a ecological way.
- Be careful of the risk of burning and splashing (exhaust, radiator, I.C. engine, etc.).

MAINTENANCE

- Perform the periodic service (see: 3 - MAINTENANCE) to keep your lift truck in good working conditions. Failure to perform the periodic service may cancel the contractual guarantee.

MAINTENANCE LOGBOOK

- The maintenance operations carried out in accordance with the recommendations given in part: 3 - MAINTENANCE and the other inspection, servicing or repair operations or modifications performed on the lift truck or its attachments shall be recorded in a maintenance logbook. The entry for each operation shall include details of the date of the works, the names of the individuals or companies having performed them, the type of operation and its frequency, if applicable. The part numbers of any lift truck items replaced shall also be indicated.

LUBRICANT AND FUEL LEVELS

- Use the recommended lubricants (never use contaminated lubricants).
- Do not fill the fuel tank when the I.C. engine is running.
- Only fill up the fuel tank in areas specified for this purpose.
- Do not fill the fuel tank to the maximum level.
- Do not smoke or approach the lift truck with a flame, when the fuel tank is open or is being filled.

HYDRAULIC

- Any work on the load handling hydraulic circuit is forbidden except for the operations described in part: 3 - MAINTENANCE.
- Do not attempt to loosen unions, hoses or any hydraulic component with the circuit under pressure.

BALANCING VALVE: It is dangerous to change the setting and remove the balancing valves or safety valves which may be fitted to your lift truck cylinders. These operations must only be performed by approved personnel (consult your dealer).

The HYDRAULIC ACCUMULATORS that may be fitted on your lift truck are pressurized units. Removing these accumulators and their pipework is a dangerous operation and must only be performed by approved personnel (consult your dealer).

ELECTRICITY

- Do not short-circuit the starter relay to start the IC engine. If the forward/reverse selector is not in neutral and the parking brake is not engaged, the lift truck may suddenly start to move.
- Do not drop metallic items on the battery.
- Disconnect the battery before working on the electrical circuit.

WELDING

- Disconnect the battery before any welding operations on the lift truck.
- When carrying out electric welding work on the lift truck, connect the negative cable from the equipment directly to the part being welded, so as to avoid high tension current passing through the alternator.
- Never carry out welding or work which gives off heat on an assembled tyre. The heat would increase the pressure which could cause the tyre to explode.
- If the lift truck is equipped with an electronic control unit, disconnect this before starting to weld, to avoid the risk of causing irreparable damage to electronic components.

WASHING THE LIFT TRUCK

- Clean the lift truck or at least the area concerned before any intervention.
- Remember to close and lock all accesses to the lift truck (doors, windows, cowls...).
- During washing, avoid the articulations and electrical components and connections.
- If necessary, protect against penetration of water, steam or cleaning agents, components susceptible of being damaged, particularly electrical components and connections and the injection pump.
- Clean the lift truck of any fuel, oil or grease trace.

FOR ANY INTERVENTION OTHER THAN REGULAR MAINTENANCE, CONSULT YOUR DEALER.

IF THE LIFT TRUCK IS NOT TO BE USED FOR A LONG TIME

INTRODUCTION

The following recommendations are intended to prevent the lift truck from being damaged when it is withdrawn from service for an extended period.
For these operations, we recommend the use of a MANITOU protective product, reference 603726.
Instructions for using the product are given on the packaging.

Procedures to follow if the lift truck is not to be used for a long time and for starting it up again afterwards must be performed by your dealership.

PREPARING THE LIFT TRUCK

- Clean the lift truck thoroughly.
- Check and repair any leakage of fuel, oil, water or air.
- Replace or repair any worn or damaged parts.
- Wash the painted surfaces of the lift truck in clear and cold water and wipe them.
- Touch up the paintwork if necessary.
- Shut down the lift truck (see: OPERATING INSTRUCTIONS UNLADEN AND LADEN).
- Make sure the jib cylinder rods are all in retracted position.
- Release the pressure in the hydraulic circuits.

PROTECTING THE I.C. ENGINE

- Fill the tank with fuel (see: 3 - MAINTENANCE: A - DAILY OR EVERY 10 HOURS SERVICE).
- Empty and replace the cooling liquid (see: 3 - MAINTENANCE: F - EVERY 2000 HOURS SERVICE).
- Leave the I.C. engine running at idling speed for a few minutes, then switch off.
- Replace the I.C. engine oil and oil filter (see: 3 - MAINTENANCE: D - EVERY 500 HOURS SERVICE).
- Add the protective product to the engine oil.
- Run the I.C. engine for a short time so that the oil and cooling liquid circulate inside.
- Disconnect the battery and store it in a safe place away from the cold, after charging it to a maximum.
- Remove the injectors and spray the protective product into each cylinder for two seconds with the piston in low neutral position.
- Turn the crankshaft once slowly and refit the injectors (see I.C. engine REPAIR MANUAL).
- Remove the intake hose from the manifold or turbocharger and spray the protective product into the manifold or turbocharger.
- Cap the intake manifold or turbocharger hole with waterproof adhesive tape.
- Remove the exhaust pipe and spray the protective product into the exhaust manifold or turbocharger.
- Refit the exhaust pipe and block the outlet with waterproof adhesive tape.

NOTE: The spray time is noted on the product packaging and must be increased by 50 % for turbo engines.

- Open the filler plug, spray the protective product around the rocker arm shaft and refit the filler plug.
- Cap the fuel tank using waterproof adhesive tape.
- Remove the drive belts and store them in a safe place.
- Disconnect the engine cut-off solenoid on the injection pump and carefully insulate the connection.

PROTECTING THE LIFT TRUCK

- Set the lift truck on axle stands so that the tyres are not in contact with the ground and release the handbrake.
- Protect cylinder rods which will not be retracted, from corrosion.
- Wrap the tyres.

NOTE: If the lift truck is to be stored outdoors, cover it with a waterproof tarpaulin.

BRINGING THE LIFT TRUCK BACK INTO SERVICE

- Remove the waterproof adhesive tape from all the holes.
- Refit the intake hose.
- Refit and reconnect the battery.
- Remove the protection from the cylinder rods.
- Perform the daily service (see: 3 - MAINTENANCE: A - DAILY OR EVERY 10 HOURS SERVICE).
- Put the handbrake on and remove the axle stands.
- Empty and replace the fuel and replace the fuel filter (see: 3 - MAINTENANCE: D - EVERY 500 HOURS SERVICE).
- Refit and set the tension in the drive belts (see: 3 - MAINTENANCE: C - EVERY 250 HOURS SERVICE).
- Turn the I.C. engine using the starter, to allow the oil pressure to rise.
- Reconnect the engine cut-off solenoid.
- Lubricate the lift truck completely (see: 3 - MAINTENANCE: SERVICING SCHEDULE).

Make sure the area is adequately ventilated before starting up the lift truck.

- Start up the lift truck, following the safety instructions and regulations (see: OPERATING INSTRUCTIONS UNLADEN AND LADEN).
- Run all the jib's hydraulic movements, concentrating on the ends of travel for each cylinder.

2 - DESCRIPTION

TABLE OF CONTENTS

« IDENTIFICATION OF THE LIFT TRUCK 2-4

CHARACTERISTICS 2-6

DIMENSIONS AND LOAD CHART 2-8

INSTRUMENTS AND CONTROLS 2-10

TOWING PIN AND HOOK 2-36

DESCRIPTION AND USE OF OPTIONS 2-38

IDENTIFICATION OF THE LIFT TRUCK

As our policy is to promote a constant improvement of our products, our range of telescopic lift trucks may undergo certain modifications, without obligation for us to advise our customers.

When you order parts, or when you require any technical information, always specify:

NOTE: For the owner's convenience, it is recommended that a note of these numbers is made in the spaces provided, at the time of the delivery of the lift truck.

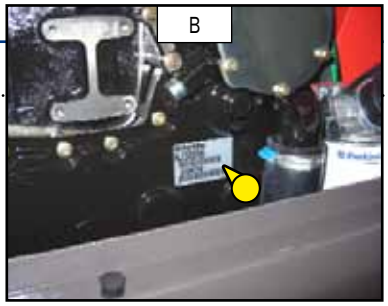
LIFT TRUCK MANUFACTURER'S PLATE (FIG. A)

- Model .....
- Series .....
- Serial Nr .....
- Year of manufacture .....

For any further technical information regarding your lift truck refer to chapter: 2 - DESCRIPTION: CHARACTERISTICS.

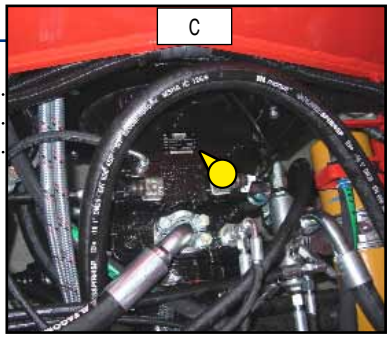
I.C. ENGINE (FIG. B)

- I.C. engine Nr .....



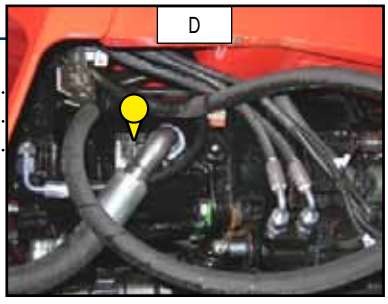
HYDROSTATIC PUMP (FIG. C)

- Type .....
- MANITOU reference .....
- Serial Nr .....



HYDROSTATIC MOTOR (FIG. D)

- Type .....
- MANITOU reference .....
- Serial Nr .....

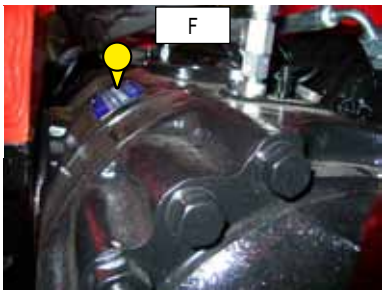


FRONT AXLE (FIG. E)

- Type .....
- Serial Nr .....
- MANITOU reference .....

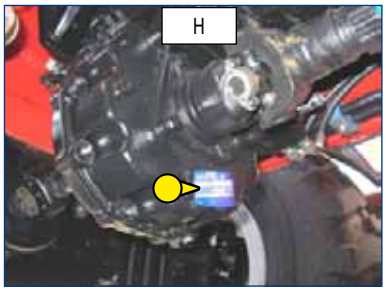
REAR AXLE (FIG. F)

- Type .....
- Serial Nr .....
- MANITOU reference .....



GEAR BOX (FIG. H) *MHT 1076 LT -E3*

- Type .....
- Serial Nr .....
- MANITOU reference .....



CAB (FIG. G)

- Type .....
- Serial Nr .....

PLATE MANUFACTURER OF THE ATTACHMENT (FIG. I)

- Model .....
- Serial Nr .....
- Year of manufacture .....

CHARACTERISTICS

MHT 780 H-E3

I.C. ENGINE		
Type		PERKINS 1104D-44TA NJ 38996
Fuel		Diesel
Number of cylinders		4 in line
Suction		Supercharged
Injection system		Direct
Ignition sequence		1,3,4,2
Capacity	cm3(cu.in)	4400(268.5)
Bore and stroke	mm(in)	105 x 127(4x5)
Compression ratio		18,2:1
Nominal rating loaded	rpm	2200
Rating slow unladen	rpm	930
Max. rating unladen	rpm	2200
Power ISO/TR 14396	cv- kW	144 - 106
Power SAE J 1995	cv- kW	144 - 106
Maximum torque ISO/TR 14396	Nm(lbf/ft)	56(410) to 1400 rpm
Air cleaner	µm	3
Type of cooling		By water
Fan		Puller (1760 min^{-1})

TRANSMISSION		
Hydrostatic pump		REXROTH
Type		A4VG71DA Hydrostatic with continuous speed adjustment and engine with inching
Forward/reverse selector		Electromagnetic
Number of forward speeds		2
Number of reverse speeds		2
Main pump		
displacement min./max.	cm^3/rpm	0 a 71
Capacity max.	L/min.(ga/m)	170(44.9)
Pressure	bar(psi)	450(6526)
Supply pump		
displacement	cm^3	19,6
Capacity max.	L/min.(gal/m)	47(12.4)
Pressure	bar(psi)	32 ±2(464)
Hydrostatic motor		REXROTH
Type		A6VM107DA
displacement min./max.	cm^3/rpm	32 a 107
Front axle		DANA
Differential		Limited slip
Reduction gear		Planetary gear
Rear axle		DANA
Reduction gear		Planetary gear
Drive wheels		4RM Permanent
Front tyres		MICHELIN
Size		18R 22,5 XF 1E TL
Pressure	bar(psi)	7,5(109)
Rear tyres		MICHELIN
Size		18R 22,5 XF 1E TL
Pressure	bar(psi)	7,5(109)

ELECTRIC CIRCUIT		
Battery	Standard	12 V - 105 Ah - 850 A EN
Alternator		12 V - 120 A
Starter		12 V - 3 kw

BRAKE CIRCUIT	
Service brake	Hydraulic power brake
Type of brake	Multidisk brake immersed in oil
Type of control	Foot-operated for the front and rear axles
Parking brake	
Type of brake	Negative action, acts on front axle service brakes
Type of control	Electro-hydrailc

SOUND AND VIBRATION		
Level of sound pressure in the driver's cab LpA (according to standard NF EN 12053)	dB	79,7
Level of sound power ensured in the LwA environment (according to directive 2000/14/EC modified by directive 2005/88/EC)	dB	103 (measured) 105 (ensured)
Average weighted acceleration on driver's body (according to standard NF EN 13059)	m/s2	
The average weighted acceleration transmitted to the driver's hand/arm system (according to standard ISO 5349-2)	m/s2(ft/s2)	< 2,5(8.2)

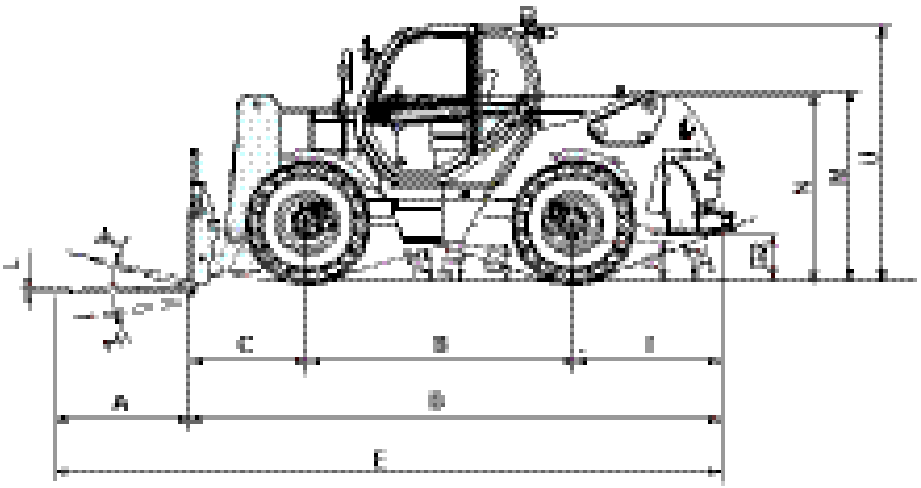
HYDRAULIC CIRCUIT		
Hydraulic pump		
Type		Variable volume pistons
		1st casing
Capacity	cm3(cu/in)	63(3.8)
Max. rating capacity unladen	l/mn(ga/m)	140(37)
Flow rate at 1600 rpm	l/mn(ga/m)	100(26.4)
Maximum service pressure	bar(psi)	270(3916)
Telescoping circuit	bar(psi)	220 / 270 (3190/3916)
Lifting circuit	bar(psi)	270 / 270 (3916/3916)
Tilt circuit	bar(psi)	190 / 280 (2756/4061
Attachment circuit	bar(psi)	270(3916)
Steering circuit	bar(psi)	175(2538)

HYDRAULIC MOVEMENTS		
Longitudinal stability limiter and warning device		Electronic
Lifting motions (boom retracted)		
Unladen lifting	s - m/mn	-
Unladen lowering	s - m/mn	-
Telescoping motions (boom raised)		
Unladen extending	s - m/mn	-
Unladen retracting	s - m/mn	-
Tilting movements		
Unladen digging	s - °/s	-
Forward tilting unladen	s - °/s	-

SPECIFICATIONS AND WEIGHTS		
Speed of movement for lift truck in standard configuration on flat ground (except particular conditions)		
Front unladen	km/h(mph)	28(17.4)
laden	km/h(mph)	10(6.2)
Rear unladen	km/h(mph)	28(17.4)
laden	km/h(mph)	10(6.2)
Rated capacity with standard attachment	kg(lbs)	8000(17637)
Standard lifting height	kg(lbs)	6800(14991)
Fork dimensions (length x width x thickness)	mm(in)	1200 x 200 x 60(47x8x2.3)
Distance from the centre of gravity from the load to the lug of the forks	mm(in)	600(23.6)
Lift truck weight with standard attachment		
Unladen	kg(lbs)	12775(28164)
At rated load	kg(lbs)	20775(45800)
Weight per axle with standard attachment (transport position)		
Front unladen	kg(lbs)	4085(9006)
Rear unladen	kg(lbs)	8690(19158)
Front rated load	kg(lbs)	18175(40069)
Rear rated load	kg(lbs)	2600(5732)
Drag strain on the coupling hook		
Unladen (sliding)	daN(lbf)	9200(20682)
At rated load (transmission setting)	daN(lbf)	10500(23605)
Pull strain with open carrier (according to standard ISO 8313)	daN	-

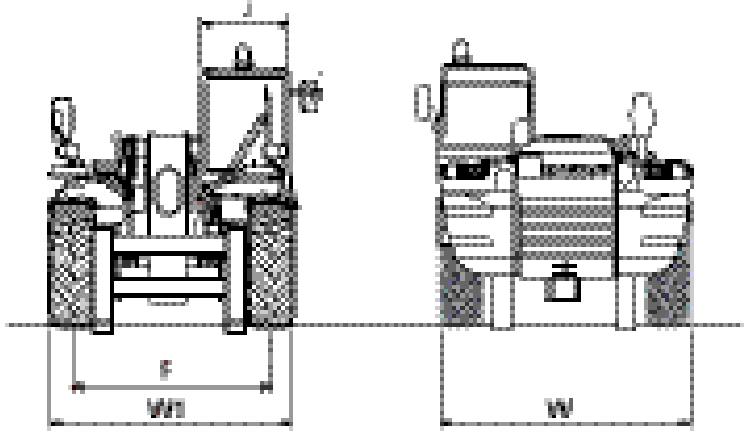
DIMENSIONS AND LOAD CHART

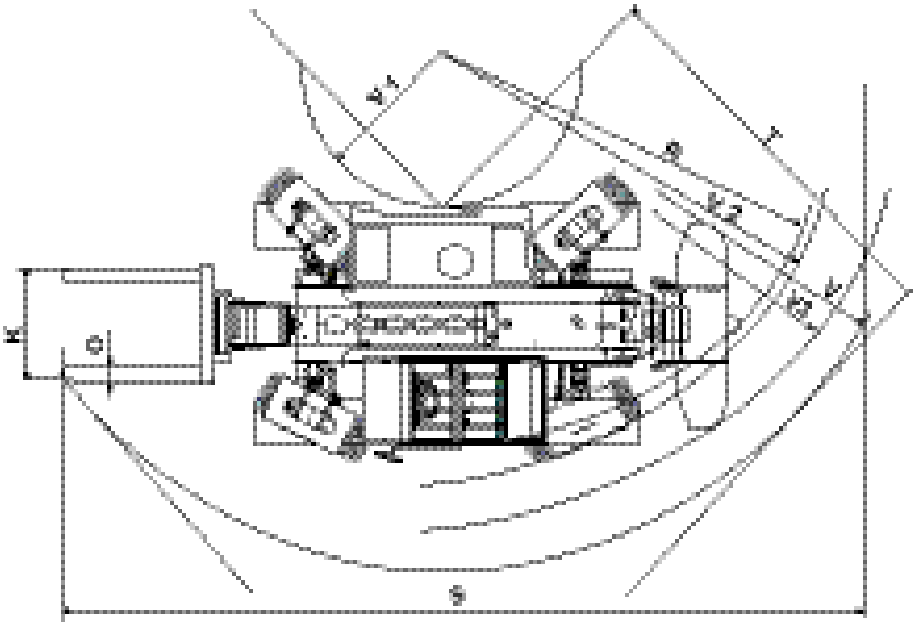
MHT 780 HT-E3



MHT 780	
A	1200
B	2670
C	1075
D	6225
E	6425
F	1990
G	380
G1	445
G2	445
I	1480
J	865
K	1750
L	60
M	1865
N	1805
O	200
R	2980
S	8040
T	4070
U	2520
V	4420
V1	485
V2	3265
V3	3675
W	2440
W1	2440
Y	12°
Z	124°

mm





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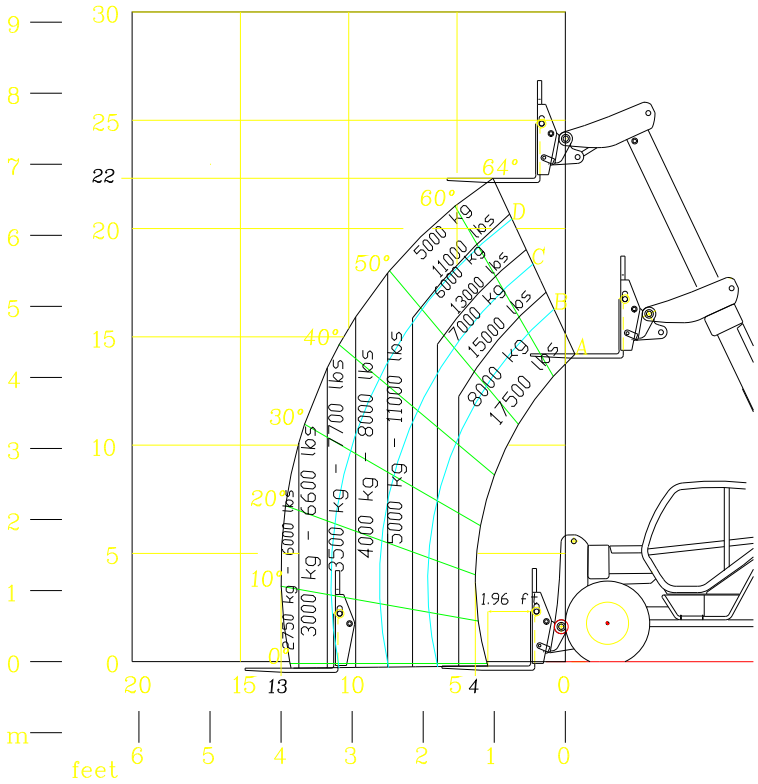
FOURCHES C.d.G. 600mm selon 1459 annexe B



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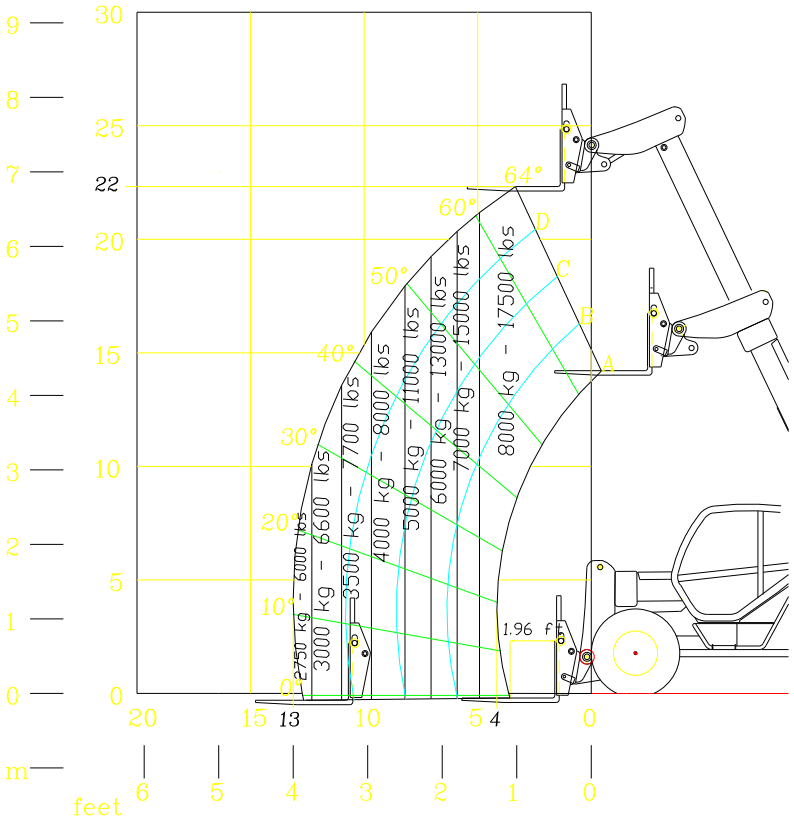

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DESCRIPTION

1 - DRIVER'S SEAT
2 - SAFETY BELT
3 - CONTROL AND SIGNAL LIGHTS PANEL
4 - LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE
5 - EMERGENCY STOP BUTTON
6 - EMERGENCY EXIT
7 - SWITCHES
8 - LIGHT SWITCH, HORN AND INDICATOR SWITCH
9 - FRONT AND REAR WINDSCREEN WIPER SWITCH
10 - IGNITION SWITCH
11 - FUSES AND RELAYS IN THE CAB
12 - FUSES AND RELAYS UNDER THE ENGINE HOOD (NOT ILLUSTRATED)
13 - DIAGNOSTIC SOCKET
14 - ACCELERATOR PEDAL
15 - SERVICE BRAKE PEDAL AND TRANSMISSION CUT-OFF
16 - FORWARD/NEUTRAL/REVERSE GEAR SELECTION
17 - HYDRAULIC CONTROLS AND TRANSMISSION CUT-OFF
18 - FUNCTION FILES
19 - LEVEL INDICATORS
20 - HEATER CONTROL
20 - AIR CONDITIONING CONTROLS (OPTION AIR CONDITIONING)
21 - CAB FILTER VENTILATORS
22 - WINDSCREEN DEMISTER VENTS
23 - HEATING VENTS
24 - BRAKE FLUID RESERVOIR AND WINDSCREEN WASHER ACCESS PANEL
25 - STEERING WHEEL REGULATING HANDLE
26 - DOOR LOCK
27 - LOCKING HANDLE FOR UPPER HALF-DOOR
28 - UNLOCKING BUTTON FOR UPPER HALF DOOR
29 - HANDLE FOR REAR WINDOW OPENING
30 - DOCUMENT HOLDER
31 - SUN VISOR
32 - OVERHEAD LIGHT
33 - HOOK
34 - CIGAR LIGHTER
35 - ARMREST AND STORAGE
36 - CAR RADIO (OPTION)
37 - INSIDE REAR-VIEW MIRROR (OPTION) (NOT ILLUSTRATED)
38 - NUMBER PLATE (NOT ILLUSTRATED)
39 - NUMBER PLATE LIGHTING (NOT ILLUSTRATED)
40 - REAR REFLECTORS (NOT ILLUSTRATED)
41 - FRONT LIGHTS (NOT ILLUSTRATED)
42 - REAR LIGHTS (NOT ILLUSTRATED)
43 - FLASHING LIGHT (NOT ILLUSTRATED)

NOTE: All the terms such as: RIGHT, LEFT, FRONT, REAR are meant for an observer seated on driver's seat and looking in front of him.

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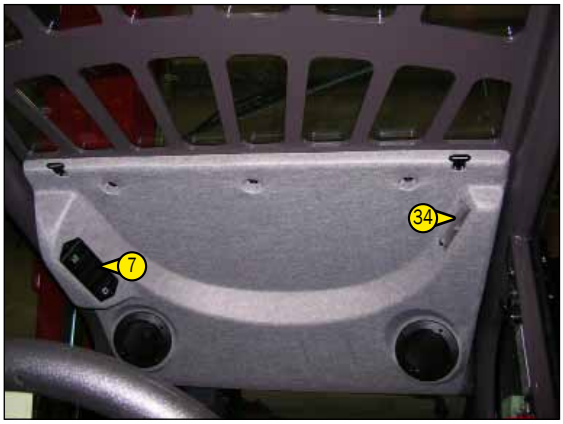
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1 - DRIVER'S SEAT

DESIGNED FOR MAXIMUM COMFORT, THIS SEAT CAN BE ADJUSTED AS FOLLOWS.

WEIGHT ADJUSTMENT (FIG. A)

It is advised that the weight be adjusted when the driver is not sitting in the cab.

- Refer to graduation 1 of the seat.
- Turn handle 2 depending on the driver's weight.

NOTE: To avoid any health problems, it is recommended that the weight should be checked and adjusted before starting up the lift truck.

SEAT HEIGHT ADJUSTMENT (FIG. B)

- Raise the seat to the desired position, until you hear the ratchet click. If you raise the seat above the last notch (stop), the seat drops down to the lowest position.

SEAT BACK-REST ANGLE ADJUSTMENT (FIG. C)

The back-rest angle of the seat may be adjusted to suit the individual.

- Press the left-hand button while pushing on the seat or relaxing pressure on the seat to find a comfortable position.

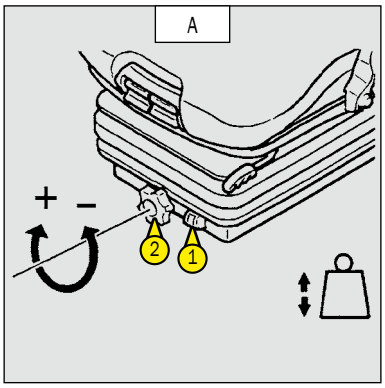
SEAT DEPTH ADJUSTMENT (FIG. D)

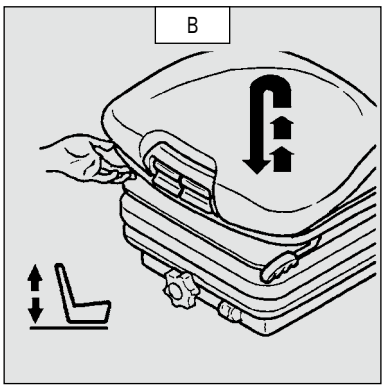
The depth of the seat may be adjusted to suit the individual.

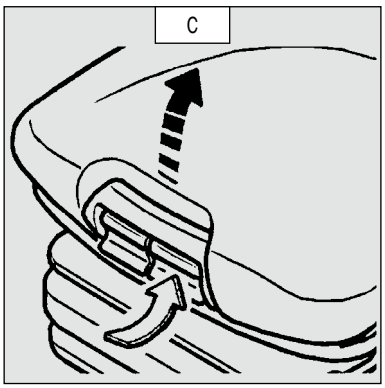
- Press the right-hand button while raising or lowering the seat to find the desired position.

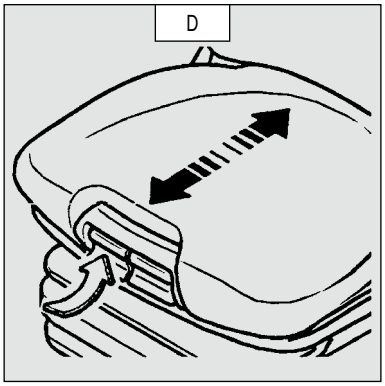
EXTENDING THE HEAD-REST (FIG. E)

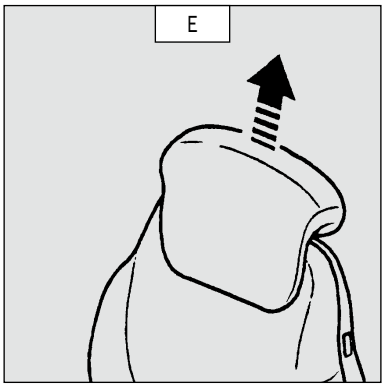
- The height of the back-rest can be adjusted by pulling it upwards (the notches will click) up to the stop.
- The head-rest can be removed by applying sufficient pressure to pull it off the stop.



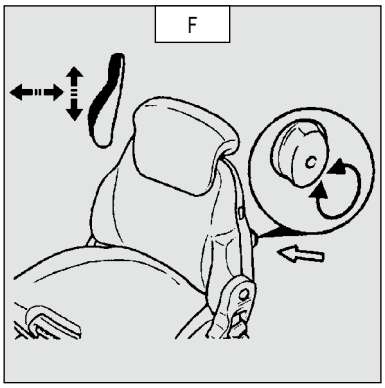








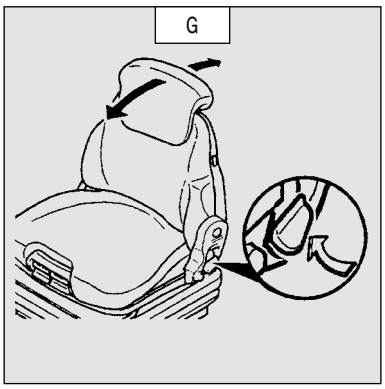
LUMBAR ADJUSTMENT (FIG. F)
This increases the comfort of the seat and the driver's freedom of movement.
- Turn the handle either left or right to adjust the height or depth of the lumbar support.



ADJUSTMENT OF THE ANGLE OF THE BACK-REST (FIG. G)
- Support the back-rest, pull the lever and position the back-rest to find the desired position.

If you do not support the back-rest when making adjustments, it swings completely forwards.

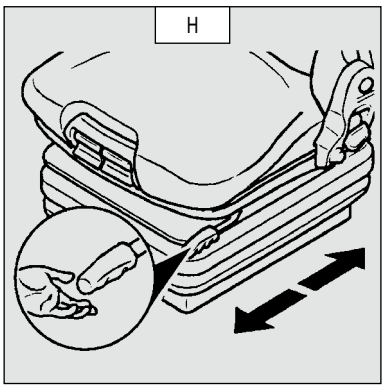
LONGITUDINAL ADJUSTMENT (FIG. H)
- Adjust the locking lever until you reach the position required. This then locks and the seat will not shift into another position.

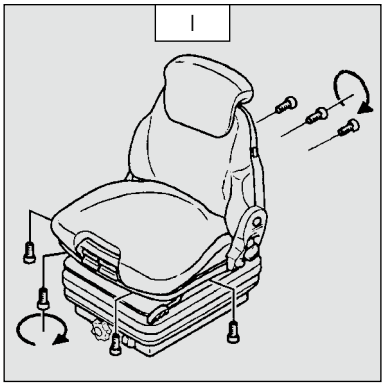


MAINTENANCE (FIG. I)
Dirt may adversely affect the correct functioning of the seat. For this reason, make sure your seat is always clean.
- To clean or change the cushions, simply remove them from the seat frame.

A rocking head-rest increases the risk of an accident !

Avoid wetting the cushion fabric when cleaning. Check the resistance of the fabric on a small hidden area before using any fabric or plastic cleaner.





1 - BASIC PNEUMATIC DRIVER'S SEAT (OPTION)

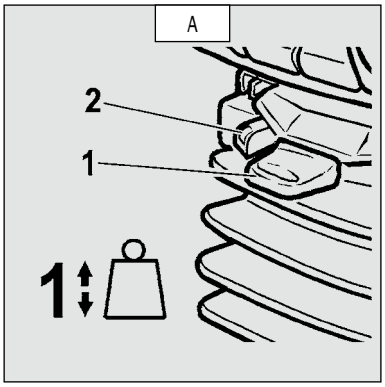
DESIGNED FOR MAXIMUM COMFORT, THIS SEAT CAN BE ADJUSTED AS FOLLOWS.

WEIGHT ADJUSTMENT (FIG. A)

It is advised that you adjust the seat according to your weight when sitting.

- Switch on lift truck ignition.
- Push or pull lever 1 until green appears in display 2 indicating correct adjustment according to your weight.

NOTE: To avoid any health problems, it is recommended that the weight should be checked and adjusted before starting up the lift truck.

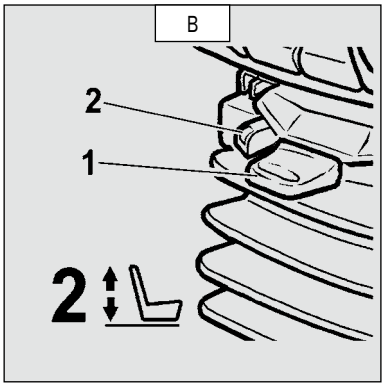


SEAT HEIGHT ADJUSTMENT (FIG. B)

When weight adjustment has been carried out, you can then modify seat height.

- Keep the ignition on in the lift truck.
- Push or pull lever 1 until green appears and adjust the height of the seat while checking that the green in display 2 remains visible.

To avoid causing any damage, do not activate the compressor for over 1 minute.



SEAT BACK-REST ANGLE ADJUSTMENT (FIG. C)

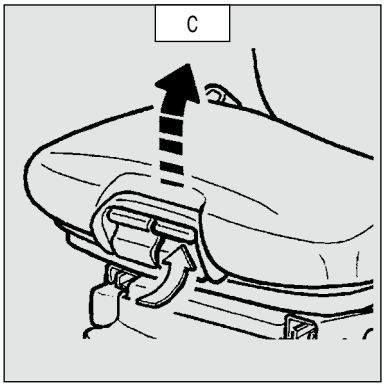
The back-rest angle of the seat may be adjusted to suit the individual.

- Press the left-hand button while pushing on the seat or relaxing pressure on the seat to find a comfortable position.

SEAT DEPTH ADJUSTMENT (FIG. D)

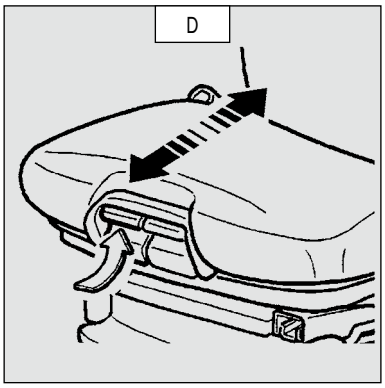
The depth of the seat may be adjusted to suit the individual.

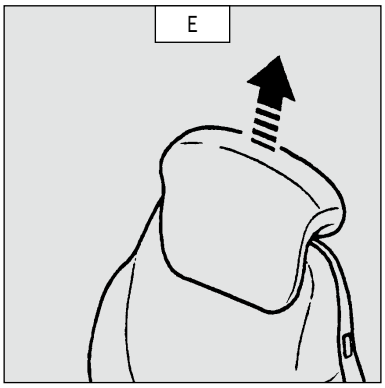
- Press the right-hand button while raising or lowering the seat to find the desired position.



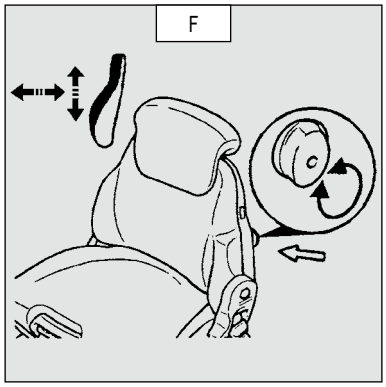
EXTENDING THE HEAD-REST (FIG. E)

- The height of the back-rest can be adjusted by pulling it upwards (the notches will click) up to the stop.
- The head-rest can be removed by applying sufficient pressure to pull it off the stop.





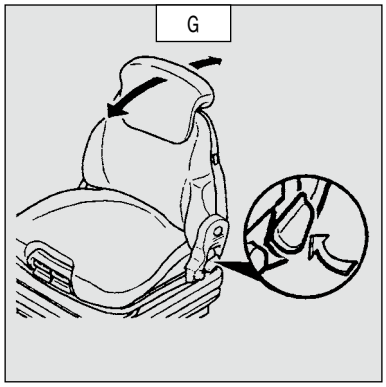
LUMBAR ADJUSTMENT (FIG. F)
This increases the comfort of the seat and the driver's freedom of movement.
- Turn the handle either left or right to adjust the height or depth of the lumbar support.



ADJUSTMENT OF THE ANGLE OF THE BACK-REST (FIG. G)
- Support the back-rest, pull the lever and position the back-rest to find the desired position.

If you do not support the back-rest when making adjustments, it swings completely forwards.

HORIZONTAL SHOCK ABSORBER (FIG. H)
In certain conditions (e.g. driving with a trailer) it is advised that a horizontal shock absorber be used. The driver's seat is thus better able to absorb jerks in the direction of travel.
- Position 1: Horizontal shock absorber fitted.
- Position 2: Horizontal shock absorber removed.

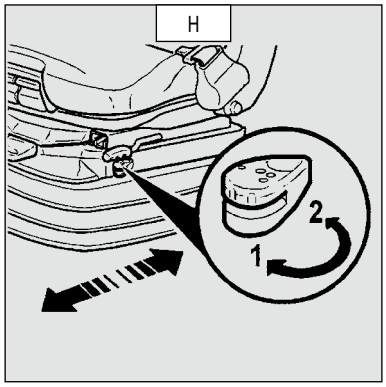


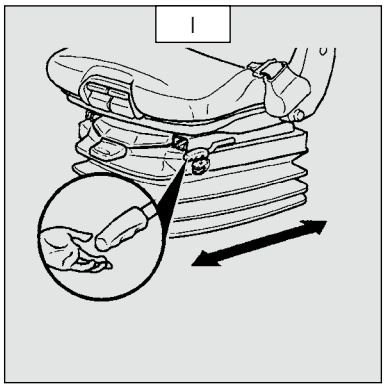
LONGITUDINAL ADJUSTMENT (FIG. I)
- Adjust the locking lever until you reach the position required. This then locks and the seat will not shift into another position.

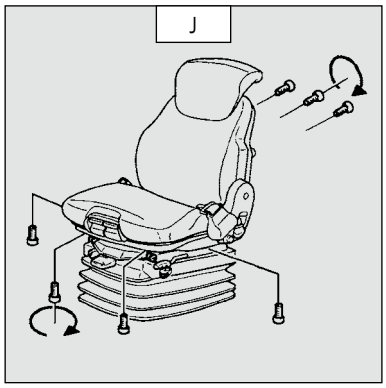
SERVICING (FIG. J)
Dirt may adversely affect the correct functioning of the seat. For this reason, make sure your seat is always clean.
- To clean or change the cushions, simply remove them from the seat frame.

A rocking head-rest increases the risk of an accident !

Avoid wetting the cushion fabric when cleaning. Check the resistance of the fabric on a small hidden area before using any fabric or plastic cleaner.







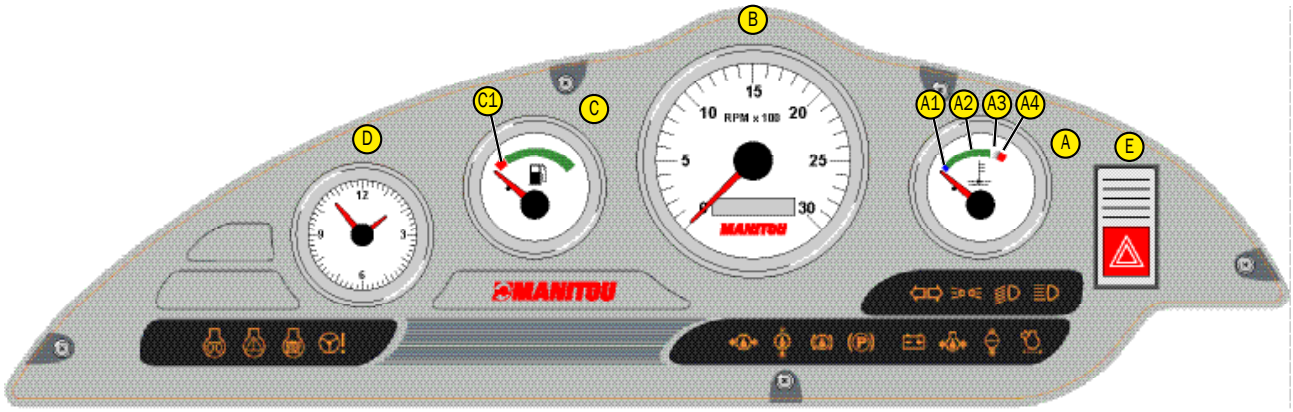
2 - SAFETY BELT

- Sit correctly on the seat.
- Check that seat belt is not twisted.
- Place the seat belt at hip level.
- Attach the seat belt and check that it locks.
- Adjust the seat belt to your body shape without squeezing your hip and without over-slack.

In no event should the lift truck be used if the seat belt is defective (fixing, locking, cuts, tears, etc.). Repair or replace the seat belt immediately.

3 - CONTROL AND SIGNAL LIGHTS PANEL

CONTROL INSTRUMENTS



A - I.C. ENGINE WATER TEMPERATURE

Temperature zone:

A1 - Blue zone (0° - 50°) Use the lift truck with moderation, wait for temperature to increase before normal operation.
A2 - Green zone (50° - 100°) Use lift truck normally
A3 - White/red zone (100° - 105°) Use lift truck with moderation, monitor the temperature.
A4 - Red zone (105° - 120°) Stop the lift truck, look for the cause of overheating.

NOTE: Red indicator light comes on between zone A3 and A4.

B - HOUR METER AND REV COUNTER

C - FUEL LEVEL

Red zone C1 indicates that you are using the reserve supply and that time of use is limited.

D - CLOCK

SIGNAL LIGHTS

A permanently lit or flashing warning lamp, with the engine running, is the sign of an operating fault. The lighting of some lamps may be accompanied by an audible signal. Do not ignore this warning, consult your dealer without delay.
If one of the warning lamps comes on while the lift truck is in motion, stop the lift truck under the safest possible conditions.

When activating the electrical system of the lift truck, all the red and orange lamps and the panel's buzzer must light to indicate their good working order. If one of the red lamps or the buzzer does not function, carry out the necessary repairs.

NOTE: only for: MLT ... -120 ...

ORANGE I.C. ENGINE PREHEATING INDICATOR LIGHT
Preheating is necessary. When the lift truck is switched on, the lamp comes on for 2 seconds and off as soon as preheating is ended. Start the lift truck's I.C. engine.

ORANGE I.C. ENGINE WARNING INDICATOR LIGHT
If the lamp comes on or flashes while the lift truck is in operation, a diagnostic fault has been detected. The lift truck will operate in reduced mode. Consult your dealer without delay.

RED I.C. ENGINE STOPPED INDICATOR LIGHT
If the lamp comes on or flashes, when the lift truck is running, stop the I.C. engine immediately and consult your dealer.

RED STEERING SYSTEM OIL PRESSURE WARNING INDICATOR LIGHT
If the lamp comes on when the lift truck is running, stop the I.C. engine immediately and look for the cause (possible leak, etc.).

NOTE: The indicator lights go off after engine preheating.

AVAILABLE INDICATOR LIGHT

AVAILABLE INDICATOR LIGHT

RED BRAKING OIL LEVEL WARNING INDICATOR LIGHT
If the lamp and the buzzer come on, when the lift truck is running, stop the I.C. engine immediately and look for the cause (braking oil level, possible leak, etc.). In the event of an abnormal dropping of the level, consult your dealer.

RED PARKING BRAKE LAMP
This lamp comes on when the parking brake is applied.

BATTERY CHARGE WARNING INDICATOR LIGHT
If the lamp and the buzzer come on when the lift truck is running, stop the I.C. engine immediately and look for the cause (electric circuit, alternator belt, alternator, etc.).

RED I.C. ENGINE OIL PRESSURE WARNING INDICATOR LIGHT
If the lamp and the buzzer come on when the lift truck is running, stop the I.C. engine immediately and look for the cause (engine oil level, possible leak, etc.).

RED I.C. ENGINE WATER TEMPERATURE WARNING INDICATOR LIGHT
If the lamp and the buzzer come on when the lift truck is running, stop the I.C. engine immediately and look for the cause (coolant level, possible leak, radiator, etc.).

RED AIR FILTER OR HYDRAULIC RETURN FILTER CLOGGED INDICATOR LIGHT
The lamp and buzzer come on when the air filter cartridge or the hydraulic return oil filter cartridge is clogged up. Stop the I.C. engine and carry out the necessary repairs (see cleaning and replacement requirements in chapter: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).

GREEN DIRECTION INDICATOR LAMP

GREEN SIDELIGHTS LAMP

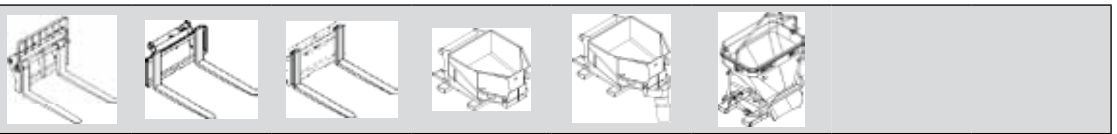
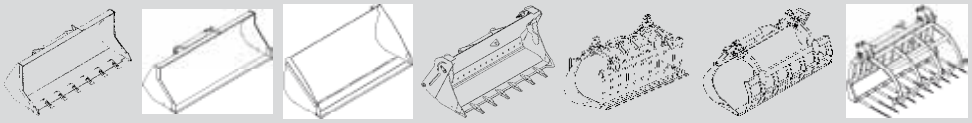
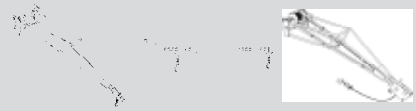
GREEN LOW BEAM LAMP

BLUE MAIN BEAM LAMP

4 - LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE

This device warns the operator of the lift truck's longitudinal stability limits. However, lateral stability can reduce the load chart in the upper part, and this reduction is not detected by the device.
According to the type of work required, the longitudinal stability limiter and warning device allows the operator to operate the lift truck in complete safety.

The operator must respect the lift truck's load chart, and the operating mode according to the attachment.

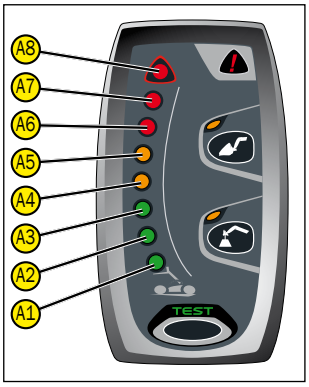
A	"HANDLING" MODE	
B	"BUCKET" MODE	
C	"SUSPENDED LOAD" MODE	

A - "HANDLING" MODE

Use on forks (TFF, PFB, TDL), and adjustable accessories on forks (BB, GL).

- By default, the device is in "HANDLING" MODE when the lift truck is started-up, except if the "SUSPENDED LOAD" MODE has been selected before shutting-down the engine.
  - A1 - A2 - A3: There is a significant reserve of longitudinal stability.
  - A4 - A5: The lift truck is approaching the limit of longitudinal stability, move with care.
  - A6: The lift truck is very near at the limit of longitudinal stability. The alarm sounds simultaneously with a slow intermittent sound. Move with care.
  - A7: The lift truck is very near at the limit of longitudinal stability. The alarm sounds simultaneously with a fast intermittent sound. Move with extreme care.
  - A8: The lift truck is at the authorized limit of longitudinal stability. A continuous acoustic alarm is simultaneously sounded. All "AGGRAVATING" hydraulic movements are cut-off. Cut-off may be preceded by automatic slowing of hydraulic movements. Only perform hydraulic movements that increase stability in the following order; retract and raise the jib.

NOTE: When the jib is retracted, the function for cutting-off "AGGRAVATING" hydraulic movements is disconnected.



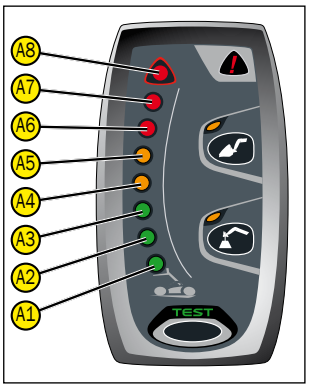
B - "BUCKET" MODE

Use with a bucket (CB, CBA, CBC, CBG, CBR, CBM, FFGR).

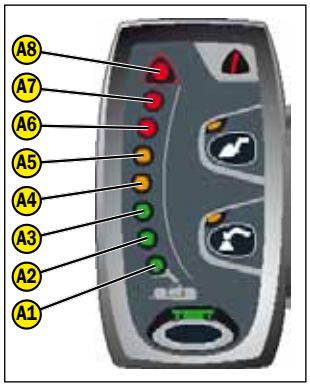
- Place the lift truck in the transport position.
- Press the button for 2 seconds, the "BUCKET" MODE is confirmed by an audible beep and the lighting of the lamp.
- Return to "HANDLING" MODE by pressing the button , or loss of driver presence for a few seconds, or shutting down the engine.
  - A1 - A2 - A3: There is a significant reserve of longitudinal stability.
  - A4 - A5: The lift truck is approaching the limit of longitudinal stability, move with care.
  - A6: The lift truck is approaching the limit of longitudinal stability. An audible beep is sounded. Move with care.
  - A7: The lift truck is very close to the limit of longitudinal stability. Move with extreme care.
  - A8: The lift truck is at the authorized limit of longitudinal stability.

All hydraulic movements remain available, ONLY PERFORM DE-AGGRAVATING HYDRAULIC MOVEMENTS IN THE FOLLOWING ORDER: RETRACT AND RAISE THE JIB.

NOTE: According to the version, the jib lowering and extension movements may be cut-off and preceded by an automatic slowing of hydraulic movements. In this case, when the jib is retracted, the function for cutting-off "AGGRAVATING" hydraulic movements is disconnected.



C - "SUSPENDED LOAD" MODE



Use with crane jib (P, PC, PT, PO).

- Place the lift truck in the transport position.
- Press the button for 2 seconds, "SUSPENDED LOAD" MODE is validated by an audible beep and the lighting of the lamp.
- Return to "HANDLING" MODE by pressing the button .

A1 - A2 - A3: There is a significant reserve of longitudinal stability.

A4 - A5: The lift truck is approaching the limit of longitudinal stability, move with care.

A6: The lift truck is very near at the limit of longitudinal stability. The alarm sounds simultaneously with a slow intermittent sound. Move with care.

A7: The lift truck is very near at the limit of longitudinal stability. The alarm sounds simultaneously with a fast intermittent sound. Move with extreme care.

A8: The lift truck is at the authorized limit of longitudinal stability. A continuous acoustic alarm is simultaneously sounded. All "AGGRAVATING" hydraulic movements are cut-off. Cut-off may be preceded by automatic slowing of hydraulic movements. Only perform hydraulic movements that increase stability in the following order; retract and raise the jib.

NOTE: When the jib is retracted, the function for cutting-off "AGGRAVATING" hydraulic movements is disconnected.

D - KEY SELECTOR FOR DISCONNECTING THE LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE

In certain cases, in order to get out of a difficult situation, the operator can bypass this safety system.
Key selector D temporarily disables the cutting-off of "AGGRAVATING" hydraulic movements.
-Keep key selector D turned in position "0" to proceed and simultaneously perform the necessary "AGGRAVATING" hydraulic movement with extreme care. The combined use of these two actions is limited to 60 seconds.

Remain very vigilant during this operation. The only information available to the operator is the lift truck's dynamic stability.

The safety system can be deactivated manually only in case of emergency and for reasons of safety
With the safety system deactivated, the operator and the truck are exposed to risks and there is nothing to prevent overloading and/or tipping over of the vehicle.

Key selector D has two positions "1" and "0":

- in position "1" the safety system is activated;
- in position "0" the safety system is deactivated.

During normal use, the key selector is turned to position "1", the safety system is activated.

Key D is kept safe inside a safety box D2 placed behind the driver's seat.
Break the safety glass to pick up the key D3.

Note: When the safety system is disenabled, an alarm sound is automatically activated to warn the driver and other persons who may be present in the area of a possible danger situation.

When the emergency procedures have been completed the key must put back in the safety box and the safety glass must be replaced.

.

E - TESTING OF THE LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE

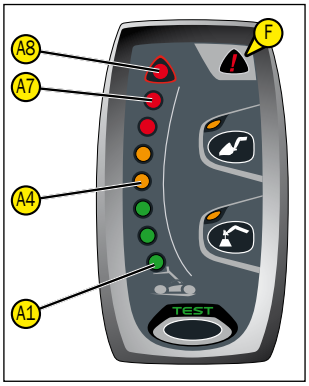
- Short press the button

at any time to check the correct operation of the longitudinal stability limiter and warning device.
  - Correct operation: All the leds light for two seconds and an audible beep is sounded.

NOTE: This test does not check the proper adjustment of the device that must be inspected daily or after every 10 hours of service (see: 3 - MAINTENANCE: A - DAILY OR EVERY 10 HOURS SERVICE).

F - FAULT INDICATOR LAMP

A permanently lit fault indicator lamp F, together with a combination of illuminated leds, indicates a major fault liable to affect the safety of the lift truck. Refer to your agent or dealer.



- The fault indicator lamp plus leds A1 and A7 lighting alternately with A4 and A8 indicates a defective link in the operation of the longitudinal stability limiter and warning device.

- The fault indicator lamp plus continuously lit leds A7 and A8 indicate a faulty box.

G - STRAIN GAUGE

Disassembly or calibration of the strain gauge is prohibited, this must only be done by specially trained personnel, consult your dealer.

5 - EMERGENCY STOP BUTTON

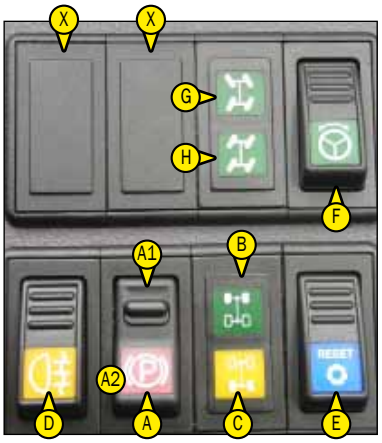
- In the event of danger, it lets you stop the I.C. Engine and thereby cut out all hydraulic movements.
- Pull the button to disable it before restarting the lift truck.

Be ready for hydraulic movements suddenly stopping when you press this button.

6 - EMERGENCY EXIT

In the event that it is impossible to exit the cab by the door, using a rear window 1 or the windshield 2 as emergency exit.

7 - SWITCHES



NOTE: The location of the switches may vary depending on the options.

A - PARKING BRAKE SWITCH
Two-position luminous switch with safety block.
The parking brake acts on the front axle.
- To release the brake, press the pushbutton in position A1".
- To lock the brake, press the pushbutton in position A2.

To release the brake from A2 to A1, while pressing the switch, act on safety lock .

B - FRONT WHEELS ALIGNMENT GREEN INDICATOR LIGHT
Indicates alignment of the front wheels with respect to the vehicle axis.
When the wheels are aligned, the indicator lights up.
(See point : *wheels alignment procedure).

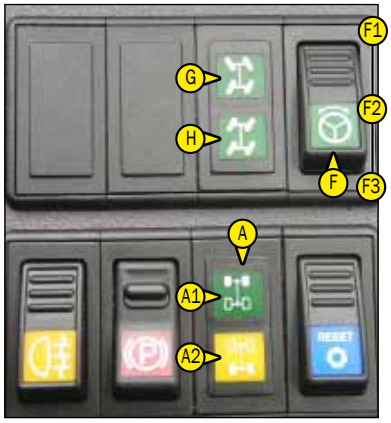
C - REAR WHEELS ALIGNMENT YELLOW INDICATOR LIGHT
Indicates alignment of the rear wheels with respect to the vehicle axis.
When the wheels are aligned, the indicator lights up.
(See point : *wheels alignment procedure).

D - REAR FOG LIGHT SWITCH
Two-position luminous switch.

F - TRANSMISSION RESET PUSHBUTTON LIGHT ON
During normal use, the pushbutton light is On.
For more detailed information regarding its working, see point " SPEED SELECTOR (SLOW-FAST)".

X - OPTION

F - DIRECTION SELECTION SWITCH



Before selecting one of the three possible steering positions, bring all 4 wheels into alignment with regards to the lift truck axle. Never change the steering mode whilst driving.

F1 - Front and rear steering wheels in opposite directions (Short or concentric steering).

F2 -Front steering wheels (Road travel).

F3 -Front and rear steering wheels in the same direction (crab steering).

*Wheel alignment procedure:
Press the steering mode selection switch on “F1”, turn the steering wheel until the rear wheels are aligned A2, press the steering mode selection switch on “F2”, and turn the steering wheel until the front wheels are aligned A1.
When the front and rear wheels are aligned, one of the three steering modes mentioned above can be selected.

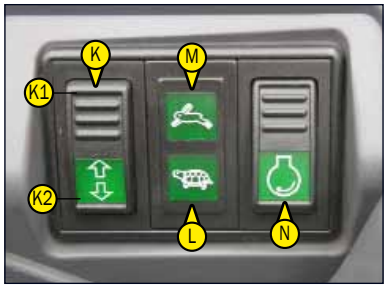
The wheels coordination may be lost with use; carry out realignment of the wheels every 20 hours of service by following the procedure described above.

Before driving on roads, it is necessary to check the alignment of the rear wheels and to drive in front wheel steer. The control of the alignment of the rear wheels must be regularly done with the help of the green lamps, while driving the lift truck. In case of anomalies, consult your dealer.

G - CONCENTRIC STEERING GREEN LIGHT
The green light indicates that concentric steering is selected.

H - LATERAL OR CRAB STEERING GREEN INDICATOR LIGHT
The green light indicates that lateral or crab steering is selected.

K - SPEED SELECTOR (SLOW-FAST)



The machine can run at two speeds:
- Slow (for work site)
- Fast (for road travel)

To change the speed, follow the instructions given below:
- stop the forklift truck movement completely
- keep the i.c. engine running at minimum speed
- position the reverse gear in idle (see point)
- push the brake pedal all the way and press the slow-fast pushbutton “M” until the respective lights “L” or “M” light up.

If the forward/reverse movement is not activated, follow the instructions given below:
- position the reverse switch as required (Forwards - Reverse)
- discharge pressure from the brake pedal
- Press the “F” “TRANSMISSION RESET” pushbutton to obtain the connection in the required direction.
- If the vehicle does not move, start accelerating the internal combustion engine slowly and gradually until the truck starts moving.

These indications must be followed for proper working of the transmission.

L - SLOW SPEED GREEN INDICATOR LIGHT
The green light indicates that slow speed is selected.

M - FAST SPEED GREEN INDICATOR LIGHT
The green light indicates that fast speed is selected.

N - OPERATING MODE
Activating the two-position switch will activate the operating system concerned to work slowly and accurately.
The switch can also be turned on with the lift truck in motion..

O - OPTIONAL DISCONNECT SWITCH (accessories hydraulic block)
The two-position switch is used for activating or deactivating the optional.
With the switch pressed in pos. “O1” (red indicator light On) the Optional/ accessories hydraulic block function is activated.
With the switch pressed in pos. “O2” (red indicator light Off) the Optional/ accessories hydraulic block function is deactivated.

P - STOPPING HYDRAULIC MOVEMENTS
While travelling on roads, it is advisable (compulsory in Italy and Germany) to stop all hydraulic movements.
The indicator lights up when the movements are being used.

Q - LEVELLING CONTROL PUSHBUTTON

MHT 860 LT-E3
MHT 950 LT-E3
MHT 1076 LT-E3

The pushbutton has two positions; it controls the truck level correction movements to the right and left.
- pressing the button in position “Q1” will level the truck on the left
- pressing the button in position “Q2” will level the truck on the right

Verify the correct levelling using the sprit level placed in the cab (see point “17” on page 23 “Spirit level”)

N. B.: The levelling operation is not possible when the telescopic boom is inclined beyond approx. 30° from the ground.

R - 2°/3° HYDRAULIC EXIT SWITCH (OPTIONAL)
The switch has two or three positions depending on the machine setup.
It is used for switching the hydraulic control for making two or three hydraulic movements using the accessory.

S - ROTARY BEACON SWITCH
Two-position switch for turning the rotary beacon light on/off.

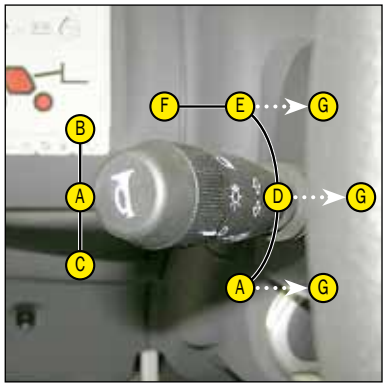
T - FRONT AND REAR WORK LIGHTS SWITCH (OPTIONAL)
Three-position switch for turning the work lights On/off.

U - SWITCH FOR WORK LIGHT AT THE TOP OF THE BOOM (OPTIONAL)

V - SWITCH FOR DEFROSTING REAR WINDOW (OPTIONAL)

Z - SWITCH FOR ROOFTOP WINDOW WIPER (OPTIONAL)

8 - LIGHT SWITCH, HORN AND INDICATOR SWITCH

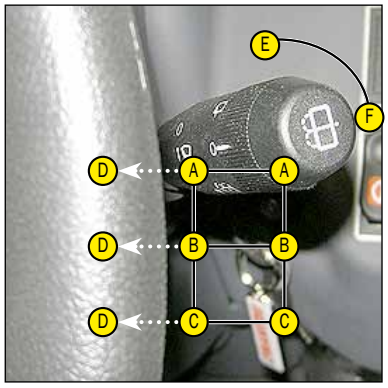


The switch controls the visual and sound alarms.

A - All lights are off, the direction indicators do not flash.
B - The right hand direction indicators flash.
C - The left hand direction indicators flash.
D - The sidelights and the rear lights are on.
E - The dipped headlights and the rear lights are on.
F - The main beam headlights and the rear lights are on.
G - Headlight signal.

Pressing the switch sounds the horn.
NOTE: The positions D - E - F - G can be carried out without the ignition being on.

9 - FRONT AND REAR WINDSCREEN WIPER SWITCH



FRONT WINDSCREEN WIPER

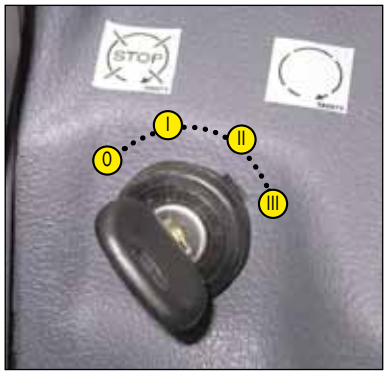
A - Front windscreen wiper off.
B - Front windscreen wiper low speed setting.
C - Front windscreen wiper high speed setting.
D - Front windscreen wiper intermittent setting.

REAR WINDSCREEN WIPER

E - Rear windscreen wiper off.
F - Rear windscreen wiper on.

NOTE: These functions will only work when the ignition is switched on.

10 - IGNITION SWITCH



The key switch has four positions:

O - Ignition switched off and I.C. engine stopped.
I - Ignition and pre-heating.
II - Not used.
III - The I.C. engine starts, return to position I as soon as the key is released.

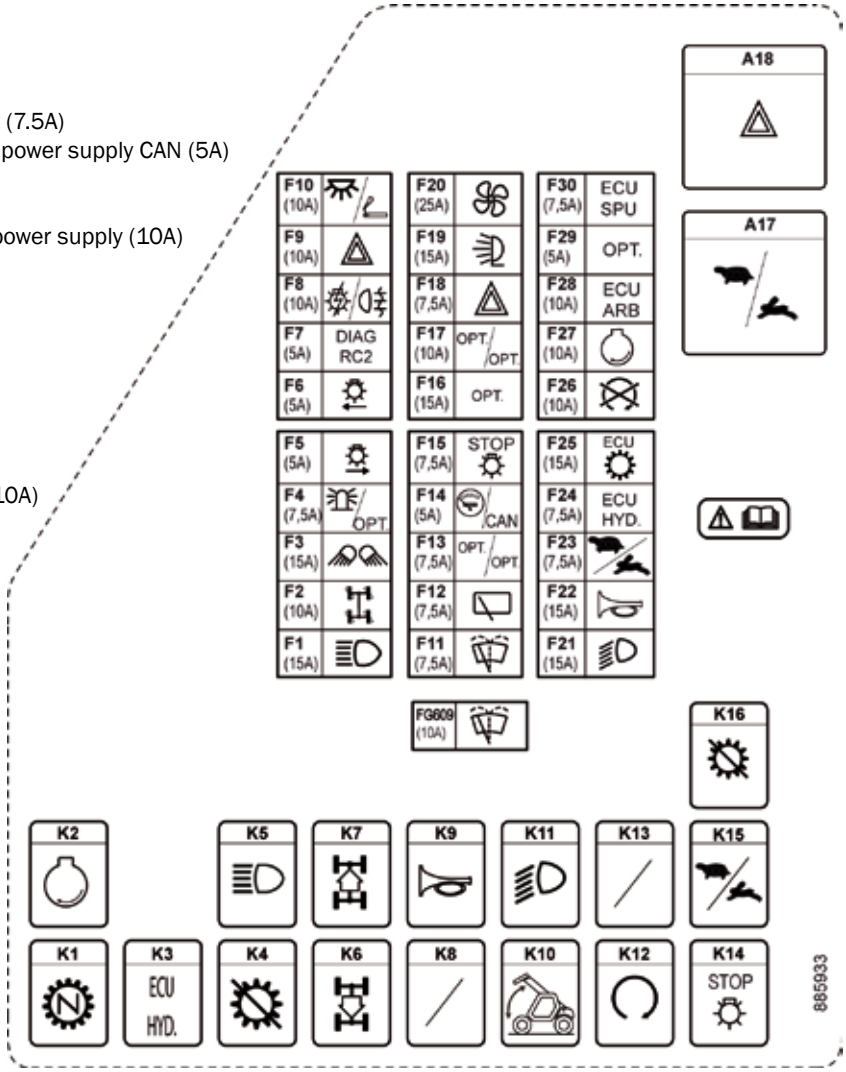
11 - FUSES AND RELAYS IN THE CAB

Remove the door that provides access to the fuses and relays 1

NOTE: A sticker on the inside of the access panel gives a clear display of the use of the components described below.

Always replace a faulty fuse with another of equivalent rating. Never use a fuse that has been repaired.

A17 – Slow-fast relay
A18 - Warning relay.
F1 – Main beams (15A)
F2 - sensors/axles alignment power supply (10A)
F3 – work lights (15A)
F4 – Revolving warning light/vehicle radio switch power supply (7,5A)
F5 – RH position lights (5A)
F6 – LH position lights (5A)
F7 – diagnostics power supply RC2 (5A)
F8 – light switch/rear fog lights power supply (10A)
F9 - +30 warning (10A)
F10 – ceiling light/cigarette lighter (10A)
F11 – anterior windshield wiper switch (7.5A)
F12 - rear windshield wiper power supply (7.5A)
F13 - seat compressor/seat defroster power supply (7.5A)
F14 – indicator lights and instruments/control unit power supply CAN (5A)
F15 – stop micro switch (7.5A)
F16 – optional power supply (15A)
F17 – bucket switch/double-triple optional output power supply (10A)
F18 - +15 warning (7.5A)
F19 – boom work lights switch (15A)
F20 – heating (25A)
F21 – Low beams (15A)
F22 – Horn (15A)
F23 – slow-fast switch power supply (7.5A)
F24 – hydraulic movements control unit (7.5A)
F25 – transmission control unit (15A)
F26 – mushroom-shaped emergency pushbutton (10A)
F27 – operating mode power supply (10A)
F28 – ARB control unit power supply (10A)
F29 – optional (5A)
F30 – power supply +15 EQU-SPU (7.5A)
FG609 – power supply +30 EQU-SPU (10A)
K1 – Idle relay
K2 – Operating mode solenoid valve relay
K3 – Hydraulic movements enable relay
K4 – Transmission cut off relay
K5 – Main beams relay
K6 -Reverse movement relay
K7 - Forwards movement relay
K8 - spare
K9 – Horn relay
K10 - Boom sensors relay
K11 - Low beams relay
K12 – Start up enable relay
K13 - spare
K14 - Stop micro switch relay
K15 - Speed change relay
K16 – Transmission cut-off relay

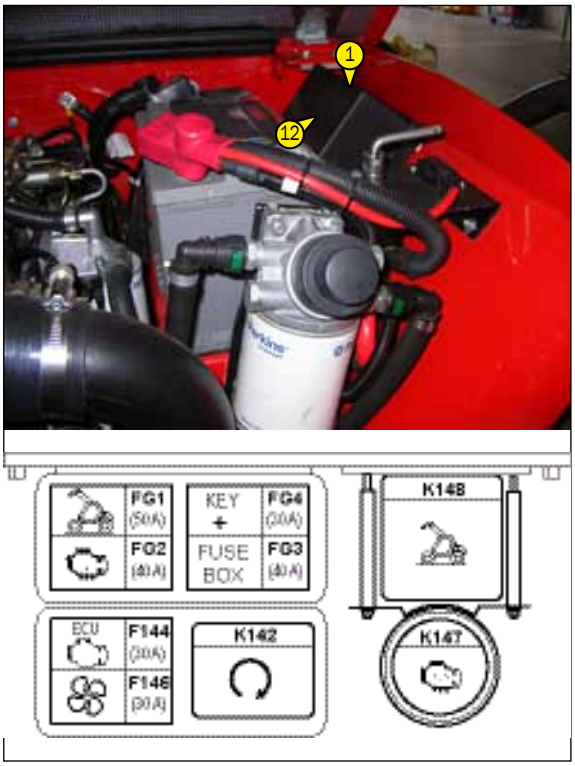


12 - FUSES AND RELAYS UNDER THE ENGINE HOOD

Remove casing 1 and cover 2 for access to fuses and relays.

Always replace a faulty fuse with another of equivalent rating. Never use a fuse that has been repaired.

FG1 - Services Relè (50A)
FG2 - Preheating I.C. engine (40A)
FG3 - Control fuse and relè in cab (40A).
FG4 - + 30 KEY (30A)
F144 - Engine control unit (30A).
F146 - Heating cab (30A)
K142 - Start up enable relay (30A)
K147 - Preheating I.C. engine (30A)
K148 - Heating cab (30A)



13 - DIAGNOSTIC CONNECTOR

Remove the door that provides access to the diagnostic connector A.

A - Electronic control

14 - ACCELERATOR PEDAL

15 - SERVICE BRAKE PEDAL AND TRANSMISSION CUT-OFF

The pedal applies on the front and rear wheels by an hydraulic brake system, and allows the lift truck to be slowed down and stopped. Depending on the position of the transmission cut-off switch, it enables the free travel to cut off transmission (see: 2 - DESCRIPTION: 5 - SWITCHES).

16 - FORWARD/NEUTRAL/REVERSE GEAR SELECTION

FORWARD: Push the knob forward (position A).
REVERSE: Pull the knob backwards (position B).
NEUTRAL: The knob must be in the intermediate position to start the lift truck (position C).

When operating this control, the lift truck should be travelling at slow speed and not accelerating.

NOTE: The reverse lights indicate that the lift truck is running in reverse motion. An OPTIONAL audible reversing alarm can also be fitted.

SAFETY FOR MOVING THE LIFT TRUCK

Authorisation to move the lift truck is controlled by an electronic unit. The operator must observe the following sequence to move the truck forwards or backwards:

1 - sit down correctly in the driver's seat,
2 - release the parking brake,
3 - engage forward or reverse movement.

To stop the lift truck, he must observe the following sequence:

1 - Set the forward/reverse selector to neutral,
2 - engage the parking brake,
3 - get out of the lift truck.

NOTE: If the operator leaves the driving cab with forward or reverse engaged, a continuous alarm will sound. While this alarm sounds, the operator can simply sit back in the seat and continue advancing or reversing.
If the alarm becomes discontinuous, the operator must sit back in the seat, put the forward/reverse selector back in neutral and select forward or reverse if he wishes to continue moving.

17 - HYDRAULIC CONTROLS AND TRANSMISSION CUT-OFF

Do not attempt to alter the hydraulic system pressure by interfering with the pressure regulating valve. In the event of suspected malfunction, contact your dealer. ANY ALTERATION MAY RENDER THE WARRANTY NULL AND VOID.

Use the hydraulic controls carefully without jerking, to avoid accidents caused by shaking the lift truck.

NOTE: When driving on the road, it is highly recommended (mandatory in Germany) that you cut-off all the hydraulic movements (see: 2 - DESCRIPTION 7 - SWITCHES).

NOTE: If necessary use the steering to reset the hydraulic control steering accumulator.

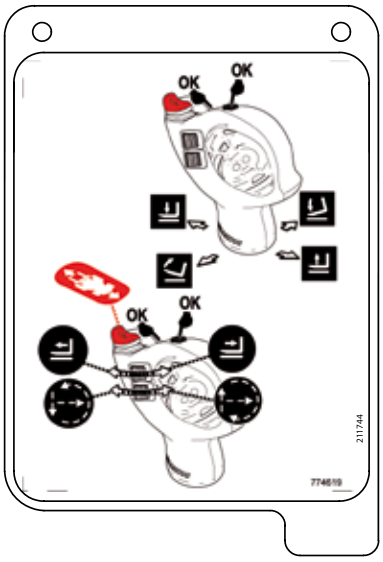
A - Lifting and tilting control lever.
B - Telescoping control button.
C - Attachment control button.

LIFTING THE LOAD
- The lever A backwards when lifting.
- The lever A forwards when lowering.

TILT OF CARRIAGE
- The lever A to the left for reverse tilt.
- The lever A to the right for forward tilt.

TELESCOPING
- Button B forwards for extending.
- Button B backwards for retracting.

ATTACHMENT
- The button C forwards or backwards.



DECOMPRESSION OF OPTIONAL CIRCUIT

This operation must be carried out each time a lift truck supplementary accessory is to be connected or disconnected.
1) Switch the combustion engine off and turn ignition key to position “I”.
2) Rotate roller “C” forwards and backwards, turn the roller for 3 seconds for each position (pushbutton D pressed and red indicator light On).

When the operation is complete, the optional is depressurized; it will therefore be easier to connect/disconnect the quick-release couplings on the top of the boom.

N. B. The operations must be carried out immediately after the combustion engine is switched off, and not for more than 3 seconds for each command.

18 - FUNCTION TAB

These tab contain the description of the hydraulic controls and the load charts for the attachments used on the lift truck.

19 - LEVEL INDICATOR

Enables the operator to check that the lift truck is in the horizontal position.

20 - HEATER CONTROL

A - HEATING FAN CONTROL
This 3-speed control regulates warm or cold air through the heating ventilators.

B - HEATING TEMPERATURE CONTROL
Allows the temperature inside the cab to be adjusted.

B1 - With the valve closed, the fan delivers fresh air.

B2 - With the valve opened completely, the fan delivers warm air.

The intermediate positions allow the temperature to be adjusted.

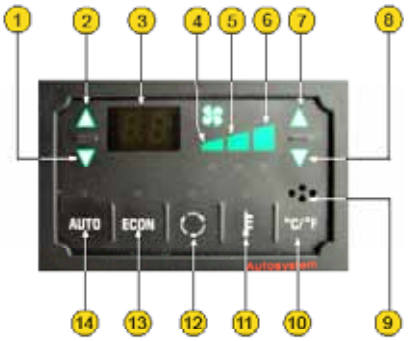
20 - AIR CONDITIONING CONTROLS (OPTION AIR CONDITIONING)

The air conditioning only comes on when the forklift truck has been started up. When using your air conditioning, you must work with the doors and windows closed.

In winter: So as to ensure correct operation and complete efficiency of the air conditioning unit, start up the compressor once a week, if only for a short spell, so as to lubricate the internal seals.

In cold weather: Warm the I.C. engine before switching on the compressor, so as to allow the coolant that has collected in the liquid state at the lowest point of the compressor circuit to turn into gas under the effect of the heat given off by the I.C. engine, as the compressor is liable to be damaged by coolant in the liquid state.

If your air conditioning does not seem to be working properly, have it examined by your dealer (see: 3 - MAINTENANCE: F - EVERY 2000 HOURS OF SERVICE). Never try to repair any possible problems by yourself.



LEGEND OF FUNCTIONS

1 – Internal temperature reduction
2 – Internal temperature increase
3 – Preset temperature indicator
4 – Fan 1st speed indicator
5 – Fan 2nd speed indicator
6 – Fan 3rd speed indicator
7 – Fan speed increase command
8 – Fan speed reduction command
9 – Internal air temperature sensor
10 - °C / °F conversion and vice versa
11 – External temperature reading command
12 – Recirculation command
13 - Compressor exclusion
14 – Restore automatic function

ERROR CODES

In case of a fault that affects the automatic regulation, the control unit displays an error code consisting of the letter E followed by a number which identifies the type of fault according to the following Table:

E 1 external air temperature sensor (E.T.) interrupted.
E 2 external air temperature sensor (E.T.) short circuit.
E 3 cab air temperature sensor (I.T.) interrupted.
E 4 cab air temperature sensor (I.T.) short circuit.
E 5 mixed air temperature sensor (M.T.) interrupted.
E 6 mixed air temperature sensor (M.T.) short circuit.

Since automatic regulation is not possible, the keys for increasing and decreasing the internal temperature are used to change the position of the mixer, while the fan speed is fixed at the 2nd speed.
When the error is solved, the control unit resumes normal operation only after resetting the + key.

Electronic control of the temperature (E.AC.C.)
To check to ensure the correct working of the heating and cooling system, make sure the engine is started up with the hoods closed, at ambient temperature between +15°C and 30°C and the engine cooling fluid sufficiently hot. If the ambient temperature is higher or lower than these values, the system automatically adjusts itself in the maximum cooling or maximum heating conditions.

1 – Checking the water regulator valve
Press the cab internal temperature increase/decrease button, the water regulator valve shifts to the maximum heating HI or maximum cooling LO condition. Make sure the mixed air temperature changes accordingly.

2 – Checking the mixed air temperature sensor
If the sensor is defective, the following error codes appear on the display: E5 = Mixed air temperature sensor (MT) open. E 6 = Mixed air temperature sensor (MT) short circuit.

3 – Checking the cab internal air temperature sensor
If the sensor is defective, the following error codes appear on the display: E5 = Internal air temperature sensor (IT) open. E 6 = Internal air temperature sensor (IT) short circuit.

4 - Compressor activation
On pressing the ECON button, the relative LED lights up and switches off alternately and the compressor is activated and deactivated, respectively, by means of the electromagnetic clutch.

5 – External air inlet and recirculation command
On pressing the Recirculation button, the relative LED lights up indicating the condition of ventilation with recirculating air. On pressing the recirculation button again, the LED switches off indicating the condition of ventilation with external air inlet.

6 – Fan speed command
The cab ventilation can be adjusted at three fan speeds: minimum, medium and maximum.

7 - °C and °F selection
When the relative LED is Off, the temperature is indicated in °C, when the LED is On the temperature is read in °F (Fahrenheit).
The maximum cab temperature value setting is 37°C or 99°F.

8 – Checking the external temperature sensor
On pressing the external temperature button , the external temperature value appears on the display.
If the sensor is defective, the following error codes appear on the display:
E5 = External air temperature sensor (ET) open.
E6 = External air temperature sensor (ET) short circuit.

21 - CAB FILTER VENTILATORS

See: 3 - MAINTENANCE: D - EVERY 500 HOURS SERVICE.

22 - WINDSCREEN DEMISTER VENTS

For optimum effectiveness, close the heating ventilators.

23 - HEATING VENTS

These heating vents enable the air to be directed to the interior of the cabin and onto the side windows.

24 - BRAKING OIL AND WINDSCREEN WASHER TANK ACCESS PANEL

- Loosen screw 1 and lift up the braking oil and windscreen washer tank access panel (see: 3 - MAINTENANCE: B - EVERY 50 HOURS OF SERVICE).

25 - STEERING WHEEL REGULATING HANDLE

This handle enables the angle and height of the steering wheel to be adjusted.

- Pull handle 1 to adjust the steering wheel.
- Push in handle 1 to lock the steering wheel in the desired position.

26 - DOOR LOCK

Two keys are provided with the lift truck to enable the cabin to be locked.

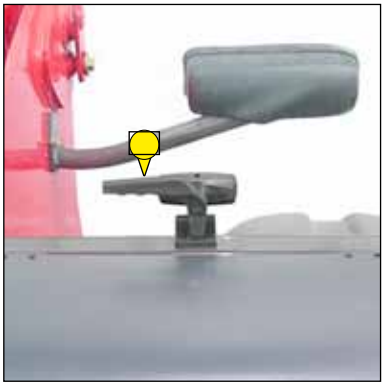
27 - LOCKING HANDLE FOR UPPER HALF-DOOR

28 - UNLOCKING BUTTON FOR UPPER HALF DOOR

29 - HANDLE FOR REAR WINDOW OPENING

EMERGENCY EXIT
Use the rear window as an emergency exit, in the event that it is impossible to leave the cab by the door or by opening the windscreen.

NOTE: There is an OPTIONAL rear window stay.



30 - DOCUMENT HOLDER

Ensure that the operator's manual is in its place in the document holder.

31 - SUN VISOR

32 - OVERHEAD LIGHT

33 - HOOK

34 - CIGAR LIGHTER

For 12 V appliance and max. amperage 10A.

35 - ARMREST AND STORAGE

- Lift the armrest 1 to access the storage.

36 - CAR RADIO (OPTION)

37 - INSIDE REAR-VIEW MIRROR (OPTION)

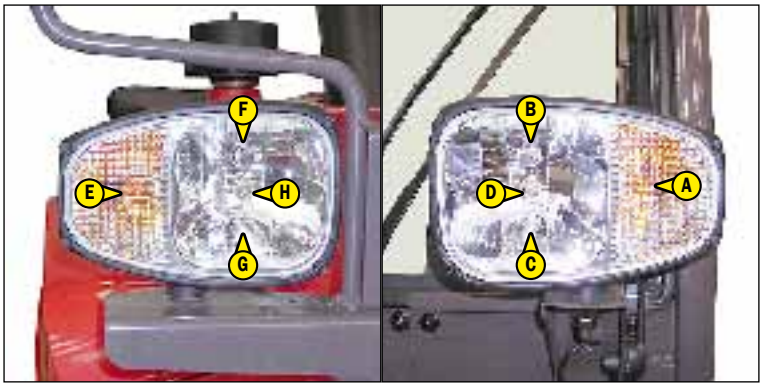
38 - NUMBER PLATE

39 - NUMBER PLATE LIGHTING

40 - REAR REFLECTORS

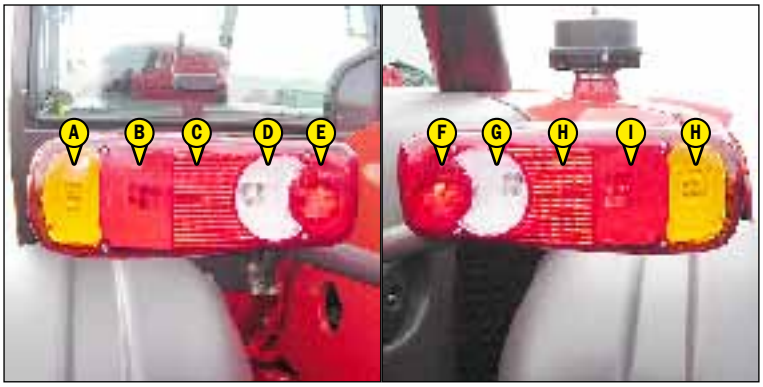
41 - FRONT HEADLIGHTS

A - Left front indicator.
B - Left front dipped headlight.
C - Left front main beam.
D - Left front sidelight.
E - Right front indicator.
F - Right front dipped headlight.
G - Right front main beam.
H - Right front sidelight.



42 - REAR LIGHTS

A - Left rear indicator.
B - Left rear stoplight.
C - Left tail light.
D - Left rear reverse light.
E - Left rear fog light.
F - Right rear fog light.
G - Right rear reverse light.
H - Right tail light.
I - Right rear stoplight.
J - Right rear indicator.



43 - REVOLVING LIGHT

STANDARD

The revolving light pivots for space-saving on the lift truck and can be detached to prevent theft.
- Loosen nut 1 and remove the revolving light.
- Protect mounting 2 with cap 3.

OPTIONAL AIR CONDITIONING

The magnetic revolving light must be clearly visible on the roof of the cab and plugged-in to socket 1.

TOWING PIN AND HOOK

Located at the rear of the lift truck, this device is used to attach a trailer. Its capacity is limited for each lift truck by the Authorized Gross Vehicle Weight, tractive force and maximum vertical force on the coupling point.

- To use a trailer, see current regulations in your country (maximum running speed, braking, maximum weight of trailer, etc.).
- Verify the trailer's condition before using it (tyre condition and pressures, electrical connection, hydraulic hose, brake system...).

Do not tow a trailer or attachment which is not in perfect working order. Using a trailer in poor condition may affect the lift truck's steering and braking, and hence safety.

If a third party helps in coupling or uncoupling the trailer, this person must be permanently visible to the driver and wait until the lift truck has stopped, the handbrake is on and the I.C. engine is switched off before performing the operation.

NOTE: A rear-view mirror allows the lift truck to approach more closely to the trailer ring.

A - COUPLING FITTING

COUPLING AND UNCOUPLING THE TRAILER

- To couple the trailer, position the lift truck as close as possible to the trailer ring.
- Put the handbrake on and switch off the I.C. engine.
- Remove the clip 1, lift the trailer pin 2 and place or remove the trailer ring.

Be careful not to get your fingers caught or crushed during this operation.
Do not forget to put clip 1 back in place.
When uncoupling, make sure that the trailer is supported independently.

B - REAR ELECTRIC SOCKET

- Connect the male plug to the female socket 1 on the lift truck and make sure the lights of he trailer or the light bar are working properly.

C - TRAILER BRAKE SYSTEM.

- Connect the brake hose to the provided brake unit 1 on the lift truck.
- Make sure the trailer brakes are working properly and test the effects of braking before taking the trailer onto the public highway.

D - CHASSIS-MOUNTED FRONT TOWING HOOK

COUPLING AND UNCOUPLING THE TRAILER

- To couple the trailer, position the lift truck as close as possible to the trailer ring.
- Put the handbrake on and switch off the I.C. engine.
- Remove the clip 1, lift the trailer pin 2 and place or remove the trailer ring.

Be careful not to get your fingers caught or crushed during this operation.
Do not forget to put clip 1 back in place.
When uncoupling, make sure that the trailer is supported independently.

DESCRIPTION AND USE OF THE OPTIONS

1 - PREHEATING ELEMENT
2 - CLEANFIX SELF-CLEANING FAN
3 - JIB SUSPENSION
4 - ATTACHMENT EASY HYDRAULIC CONNECTION
5 - EXTERIOR DRAIN BACK

1 - PREHEATING ELEMENT

Enables the engine to be kept warm during prolonged periods of stoppage and thus improves engine starting.

SUPPLY CHARACTERISTICS OF PREHEATING SYSTEM:

- Rated range of power: 220-240V; 50-60Hz
- Current consumed: 4,5A
- Equipment in class 1
- Equipment connectable only on feeder circuit TT or TN
- Category of insulation 2

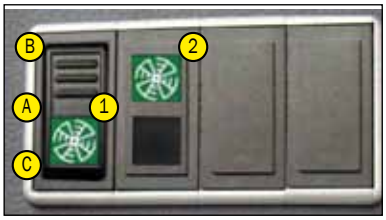
ENVIRONMENTAL CONDITIONS FOR USE:

- Maximum ambient temperature for using preheating: +25°C
- Pollution level 2

CONDITIONS FOR CONNECTION AND USE OF PREHEATING:

- The preheating system should not be used for an external ambient temperature higher than + 25°C.
- It is essential that the power supply to the preheating system is:
  - Effected with a cable that conforms to the installation standards in force and contains a protective earth conductor.
  - Contains an appropriate sectioning system.
  - Incorporate an appropriate safety system against short circuits (fuses or circuit breaker) and a differential circuit breaker with 30 mA sensitivity.
- Only connect to and disconnect from the power supply while the unit is off and the I.C. engine is stopped.

2 - FANS ROTATION INVERSION TIMED CONTROL SWITCH (OPTIONAL)



The 3-position switch can by activated to invert the rotation of the water cooler fan and intercooler radiator in the engine compartment, after a few seconds.
In this situation, the direction of fan rotation is alternated periodically (A lights up to indicate that the system is activated).

- When the switch is pressed, A (green light On 2), the fan rotation inversion function is activated.
- When the switch is pressed, B (green light Off 2), the fan rotation inversion function is deactivated.
- When the switch is in position C the fan rotation inversion function is forced. When the switch is released, the fan rotation inversion timed control is reset.

The switch can also be activated with the forklift truck running.

IMPORTANT
When the forklift truck is travelling on roads,
the fan rotation inversion system must be deactivated (switch pressed in position “C).

3 - BOOM SUSPENSION

The boom is suspended to reduce shaking of the lift truck on rough ground (e.g. moving straw in a field).

OPERATION

- Set the forks or attachment on the ground and relieve the front wheels a few centimetres only.
- Press switch 1 set to position A, the visual indicator comes on indicating that boom suspension is activated.
- Press switch 1 set to position B, the visual indicator goes out indicating that boom suspension is deactivated.

Boom suspension is active to a lifting height of 3m00 from the axis of articulation of the carriage with respect to the ground with the boom retracted. When you move beyond this height or make another hydraulic movement (tilting, telescoping, attachment), boom suspension is momentarily deactivated and the visual indicator of switch 1 goes out.

- When the I.C. engine is off, boom suspension is automatically deactivated.

4 - ATTACHMENT EASY HYDRAULIC CONNECTION

For easily connecting and disconnecting the attachment.

OPERATION

- Press for two seconds on push-button 1 to release the attachment circuit hydraulic pressure.
- Connect or disconnect the rapid connectors of the hydraulic attachment (see: 4 - OPTIONAL ATTACHMENTS FOR USE WITH THE RANGE: PICKING UP THE ATTACHMENTS).

5 - EXTERIOR DRAIN BACK

Enables connection of a hydraulic attachment for which drain-back is required.

3 - MAINTENANCE

TABLE OF CONTENTS

MANITOU ORIGINAL SPARE PARTS AND EQUIPMENT 3-4

START-UP CHECKLIST 3-5

FILTERS CARTRIDGES AND BELTS 3-6

LUBRICANTS AND FUEL 3-7

SERVICING SCHEDULE 3-9

A - DAILY OR EVERY 10 HOURS SERVICE 3-11

B - EVERY 50 HOURS SERVICE 3-17

C - EVERY 250 HOURS SERVICE 3-23

D - EVERY 500 HOURS SERVICE 3-26

E - EVERY 1000 HOURS SERVICE 3-32

F - EVERY 2000 HOURS OF SERVICE 3-35

G - OCCASIONAL MAINTENANCE 3-37

MANITOU ORIGINAL SPARE PARTS AND EQUIPMENT

OUR LIFT TRUCKS MUST BE SERVICED USING ORIGINAL MANITOU PARTS.

IF YOU USE PARTS WHICH ARE NOT ORIGINAL MANITOU PARTS,

YOU RISK

- Legally - to be held responsible in the event of an accident.

- Technically - to generate operating failure or shorten the life of the lift truck.

THE USE OF COUNTERFEIT PARTS OR COMPONENTS NOT APPROVED BY THE MANUFACTURER, MEANS YOU LOSE THE BENEFIT OF THE CONTRACTUAL GUARANTEE.

BY USING ORIGINAL MANITOU PARTS FOR MAINTENANCE OPERATIONS,

YOU BENEFIT EXPERTISE

Through its network, MANITOU provides the user with

- Know-how and competence.

- The guarantee of high-quality work.

- Original replacement components.

- Help with preventive maintenance.

- Efficient help with diagnosis.

- Improvements due to experience feedback.

- Operator training.

- Only the MANITOU network has detailed knowledge of the design of the lift truck and therefore the best technical ability to provide maintenance.

ORIGINAL REPLACEMENT PARTS ARE DISTRIBUTED EXCLUSIVELY BY MANITOU AND ITS DEALER NETWORK.
the dealer network list is available on manitou web site www.manitou.com

START-UP CHECKLIST

0 = OK 1 = Missing 2 = Incorrect

100	ENGINE	
01	Air filter	
02	Fuel tank	
03	Fuel lines - Filter	
04	Injection or carburetion system	
05	Radiator and cooling system	
06	Belts	
07	Hoses	
101	**TRANSMISSION**	
01	Direction reversal system	
02	Gear shift	
03	Cut-off pedal	
04	Clutch	
102	**AXLES/TRANSFER GEAR BOX**	
01	operation and seal	
02	Stop settings	
103	**HYDRAULIC/HYDROSTATIC CIRCUIT**	
01	Tank	
02	Pumps and couplings	
03	Tightening of connections	
04	Lift cylinder(s)	
05	Tilt cylinder(s)	
06	Attachment cylinder(s)	
07	Telescope cylinder(s)	
08	Compensation cylinder(s)	
09	Steering cylinder(s)	
10	Control Valve	
11	Balancing valve	
104	**BRAKE SYSTEM**	
01	Service brake and parking brake operation	
02	Brake fluid level	
105	**LUBRICATION AND GREASING**	
106	**JIB/MANISCOPIC/MANIACCESS ASSEMBLY**	
01	Beam and telescope(s)	
02	Skid	
03	Hinges	
04	Carriage	
05	Forks	
107	**MAST ASSEMBLY**	
01	Fixed and mobile uprights	
02	Carriage	
03	Chains	
04	Rollers	
05	Forks	

108	ATTACHMENTS	
01	Fitting on machine	
02	Hydraulic couplings	
109	**CABIN/PROTECTOR/ELECTRIC CIRCUIT**	
01	Seat	
02	Dashboard and radio	
03	Sound and visual alarm/safety system	
04	Heating/Air conditioning	
05	Windscreen wiper/windscreen washer	
06	Road horn	
07	Reversing horn	
08	Road lights	
09	Additional lights	
10	Rotating beacon light	
11	Battery	
110	**WHEEL**	
01	Rims	
02	Tyre/Pressure	
111	**SCREWS**	
112	**FRAME AND BODYWORK**	
113	**PAINTING**	
114	**GENERAL OPERATION**	
115	**OPERATOR'S MANUAL**	
116	**CUSTOMER INSTRUCTIONS**	

FILTERS CARTRIDGES AND BELTS

I.C. ENGINE

I.C. ENGINE OIL FILTER
Part number: 476964
Change: 500 H

DRY AIR FILTER CARTRIDGE
Part number: 775479
Clean: 50 H*
Change: 500 H*

SAFETY DRY AIR FILTER CARTRIDGE
Part number : 775480
Change: 1000 H*

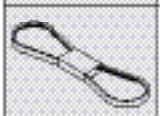
Engine base vent cartridge
Part number :743204
Change: 500 H

FUEL FILTER
Part number : 747351
Change: 500 H

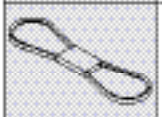
FUEL PRE-FILTER
Part number : 745032
Change: 500 H

CLEANFIX COMPRESSOR FILTER (OPTION)
Part number :781443
Change: 500 H

ALTERNATOR BELT
Part number: 503965



ALTERNATOR BELT
(OPTION AIR CONDITIONING)
Part number: 780817



COMPRESSOR BELT
(OPTION AIR CONDITIONING)
Part number: 780818

CYCLONIC PRE-FILTER
Part number: 773433
Clean: 10 H

PRE-FILTER DONALDSON (OPTIONAL)
Part number: 773665

AUTOMATIC VACUUM-CLEANING PRE-FILTER
(OPTIONAL)
Part number: 773535

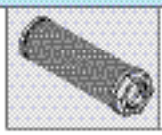
*: This periodicity is given for information only (see: 3 - MAINTENANCE: SERVICING SCHEDULE) for cleaning and changing.

TRANSMISSION

GEAR BOX OIL FILTER
Part number: : 495695
Change: 500 H

HYDRAULIC

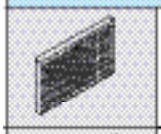
HYDRAULIC RETURN OIL FILTER CARTRIDGE
Part number: 673203
Change: 500 H



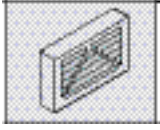
SUCTION STRAINER FOR HYDRAULIC OIL TANK
Part number: 513752
Clean : 1000 H

FILTER CAP FOR HYDRAULIC OIL TANK
Part number: 659917
Change: 1000 H

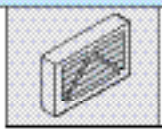
CAB



EXTERNAL AIR CAB FILTER
Part number: 882133



CAB VENTILATION FILTER (WITHOUT AIR CONDITIONING)
Part number: 225052
Clean 500 H



CAB VENTILATION FILTER (WITH AIR CONDITIONING)
Part number: : 780978
Clean: 50 H
Change : 250 H

LUBRICANTS AND FUEL

USE THE RECOMMENDED LUBRICANTS AND FUEL:
- For topping up, oils may not be miscible.
- For oil changes, MANITOU oils are perfectly appropriate.

DIAGNOSTIC ANALYSIS OF OILS

If a service or maintenance contract has been organized with the dealer, a diagnostic analysis of engine, gear box and axle oils may be requested depending on the rate of use.

(*) RECOMMENDED FUEL SPECIFICATION

Use a high-quality fuel to obtain optimal performance of the I.C. engine.

- N590 diesel fuel type - Auto/C0/C1/C2/C3/C4
- BS2869 Class A2
- ASTM D975-91 Class 2-2DA, US DF1, US DF2, US DFA
- JIS K2204 (1992) Grades 1, 2, 3 and Special Grade 3.

I.C. ENGINE				
ORGANS TO BE LUBRICATED	CAPACITY	RECOMMENDATION	PACKAGING	PART NUMBER
I.C. ENGINE	8,1L(2.1G)	MANITOU Oil API CH4		
COOLING CIRCUIT	15L(3.96G)	Cooling liquid (protection - 25°)		
		Cooling liquid (protection - 35°)		
FUEL TANK	120L(31.7G)	Diesel fuel (*)		

TRANSMISSION				
ORGANS TO BE LUBRICATED	CAPACITY	RECOMMENDATION	PACKAGING	PART NUMBER
GEAR BOX	1,8L(.47G)	MANITOU Oil Automatic transmission		
TRANSMISSION UNIVERSAL JOINT		MANITOU Grease BLUE multi-purpose		

BOOM			
ORGANS TO BE LUBRICATED	RECOMMENDATION	PACKAGING	PART NUMBER
BOOM PADS	MANITOU Grease BLACK multi-purpose		
GREASING OF THE BOOM	MANITOU Grease BLUE multi-purpose		

HYDRAULIC				
ORGANS TO BE LUBRICATED	CAPACITY	RECOMMENDATION	PACKAGING	PART NUMBER
HYDRAULIC OIL TANK	140L(36.98G)	MANITOU Oil Hydraulic ISO VG 46		

BRAKE			
ORGANS TO BE LUBRICATED	RECOMMENDATION	PACKAGING	PART NUMBER
BRAKE CIRCUIT	MANITOU Oil Mineral brake fluid		

CAB			
ORGANS TO BE LUBRICATED	RECOMMENDATION	PACKAGING	PART NUMBER
CAB DOOR	MANITOU Grease BLUE multi-purpose		
WINDSCREEN WASHER TANK	Windscreen washer fluid		

FRONT AXLE				
ORGANS TO BE LUBRICATED	CAPACITY	RECOMMENDATION	PACKAGING	PART NUMBER
FRONT AXLE DIFFERENTIAL	7,5 L(1.98 G)	MANITOU Oil Special immersed brakes		
FRONT WHEELS REDUCERS	1,95 L(.52 G)	MANITOU Oil SAE80W90 Mechanical transmission		
FRONT WHEELS REDUCERS PIVOTS FRONT AXLE OSCILLATION		MANITOU Grease BLACK multi-purpose		

REAR AXLE				
ORGANS TO BE LUBRICATED	CAPACITY	RECOMMENDATION	PACKAGING	PART NUMBER
REAR AXLE DIFFERENTIAL	7,6 L(2 G)	MANITOU Oil Special immersed brakes		
REAR WHEELS REDUCERS	1,95 L(.52 G)	MANITOU Oil SAE80W90 Mechanical transmission		
REAR WHEELS REDUCERS PIVOTS REAR AXLE OSCILLATION		MANITOU Grease BLACK multi-purpose		

CHASSIS			
ORGANS TO BE LUBRICATED	RECOMMENDATION	PACKAGING	PART NUMBER
TILTING CORRECTOR	MANITOU Grease BLUE multi-purpose		

SERVICING SCHEDULE

(1): MANDATORY 500 HOUR OR 6 MONTH SERVICE

This service must be carried out after approximately the first 500 hours of operation or within the 6 months following the start-up of the machine (whichever occurs first).

A = ADJUST, C = CHECK, G = GREASE, N = CLEAN, P = BLEED, R = REPLACE, V = DRAIN

	PAGE	(1)	DAILY OR EVERY 10 HOURS SERVICE	EVERY 50 HOURS SERVICE	EVERY 250 HOURS SERVICE	EVERY 500 HOURS SERVICE OR 6 MONTHS	EVERY 1000 HOURS SERVICE OR 1 YEAR	EVERY 2000 HOURS SERVICE OR 2 YEARS	EVERY 4000 HOURS SERVICE	OCCASIONALLY
I.C. ENGINE										
I.C. engine oil level	3-12	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Cooling liquid level	3-12	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Fuel level	3-13	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Fuel pre-filter	3-13	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Cyclonic pre-filter	3-13	N	N	<<<	<<<	<<<	<<<	<<<	<<<	
Dry air filter cartridge	3-18/31	R		C/N	<<<	R	<<<	<<<	<<<	
Radiator cores	3-18	N		N	<<<	<<<	<<<	<<<	<<<	
Condenser core (OPTION Air conditioning)	3-19	C/N		C/N	<<<	<<<	<<<	<<<	<<<	
Alternator/crankshaft belt tension	3-26	C/A			C/A	<<<	<<<	<<<	<<<	
Compressor belt tension (OPTION Air conditioning)	3-27	C/A			C/A	<<<	<<<	<<<	<<<	
I.C. engine oil	3-30	V				V	<<<	<<<	<<<	
I.C. engine oil filter	3-31	R				R	<<<	<<<	<<<	
Engine base vent filter	3-30	C				R	<<<	<<<	<<<	
Fuel pre-filter	3-32	R				R	<<<	<<<	<<<	
Fuel filter	3-33	R				R	<<<	<<<	<<<	
Fuel tank	3-36						N	<<<	<<<	
Safety dry air filter cartridge	3-36						R	<<<	<<<	
I.C. engine silent blocks							C**	<<<	<<<	
I.C. engine rates							C**	<<<	<<<	
Valves clearances		C**					C**	<<<	<<<	
Cooling liquid	3-39							V	<<<	
Radiator								C**	<<<	
Water pump and the thermostat								C**	<<<	
Alternator and the starter motor								C**	<<<	
Turbocompressor								C**	<<<	
Fuel system	3-40									P
TRANSMISSION										
Gear box oil level	3-28	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Gear box oil filter	3-19	R				R	<<<	<<<	<<<	
Gear box oil	3-34	V					V	<<<	<<<	
Silentblocks in the gear box	3-38						C**	<<<	<<<	
TYRES										
Tyres pressure	3-14	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Wheel nuts torque	3-20	C	C	<<<	<<<	<<<	<<<	<<<	<<<	
Condition of wheels and tyres							C**	<<<	<<<	
Wheel	3-38									R
BOOM										
Boom pads	3-7		G*	<<<	<<<	<<<	<<<	<<<	<<<	
Boom	3-19	G		G	<<<	<<<	<<<	<<<	<<<	
Boom pads wear							C**	<<<	<<<	
Condition of boom unit								C**	<<<	
Bearings and articulation rings								C**	<<<	
HYDRAULIC										
Hydraulic oil level	3-24	C		C	<<<	<<<	<<<	<<<	<<<	
Hydraulic return oil filter cartridge	3-33	R				R	<<<	<<<	<<<	
Hydraulic oil	3-37						V	<<<	<<<	
Suction strainer for hydraulic oil tank	3-37						N	<<<	<<<	
Filter cap for hydraulic oil tank	3-34						R	<<<	<<<	
Speeds of hydraulic movements							C**	<<<	<<<	
Condition of hoses and flexible pipes							C**	<<<	<<<	
Condition of cylinders (leakage, shafts)							C**	<<<	<<<	
Hydraulic circuit pressures								C**	<<<	
Hydraulic circuit outputs								C**	<<<	
Hydraulic oil tank								N**	<<<	

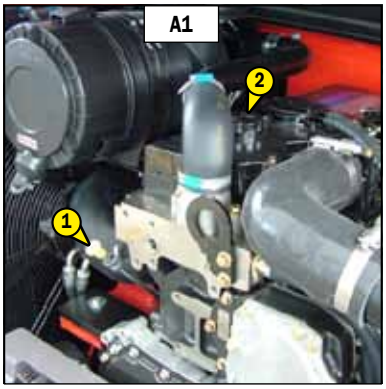
A = ADJUST, C = CHECK, G = GREASE, N = CLEAN, P = BLEED, R = REPLACE, V = DRAIN	PAGE	(1)	DAILY OR EVERY 10 HOURS SERVICE	EVERY 50 HOURS SERVICE	EVERY 250 HOURS SERVICE	EVERY 500 HOURS SERVICE OR 6 MONTHS	EVERY 1000 HOURS SERVICE OR 1 YEAR	EVERY 2000 HOURS SERVICE OR 2 YEARS	EVERY 4000 HOURS SERVICE	OCCASIONALLY
BRAKE										
Brake oil level	3-24	C		C	<<<	<<<	<<<	<<<	<<<	
Brake oil							V**	<<<	<<<	
Brake system							P**	<<<	<<<	
Brake system pressure							C**	<<<	<<<	
Brake							A**	<<<	<<<	
STEERING										
Steering								C**	<<<	
Steering swivel joints									C**	
CAB										
Windscreen washer liquid level	3-23	C		C	<<<	<<<	<<<	<<<	<<<	
Cab door	3-23	G		G	<<<	<<<	<<<	<<<	<<<	
Cab ventilation filter (OPTION Air conditioning)	3-23/27	R		N	R	<<<	<<<	<<<	<<<	
Cab ventilation filters	3-35	N				N	<<<	<<<	<<<	
Seat belt	3-38						C	<<<	<<<	
Condition of the rear view mirrors							C**	<<<	<<<	
Structure							C**	<<<	<<<	
ELECTRICITY										
Longitudinal stability limiter and warning device	3-15/45	C	C	<<<	<<<	<<<	<<<	<<<	<<<	XXX
Condition of wiring harness and cables							C**	<<<	<<<	
Lights and signals							C**	<<<	<<<	
Warning indicators							C**	<<<	<<<	
Front headlights	3-41									A
FRONT AXLE										
Front wheels reducers pivots	3-25	G		G	<<<	<<<	<<<	<<<	G/C**	
Front axle oscillation	3-25	G		G	<<<	<<<	<<<	G/C**	<<<	
Tilting corrector	3-25	G		G	<<<	<<<	<<<	G/C**	<<<	
Front axle differential oil level	3-28	C			C	<<<	<<<	<<<	<<<	
Front wheels reducers oil level	3-28	C			C	<<<	<<<	<<<	<<<	
Front axle differential oil	3-35	V				V	<<<	<<<	<<<	
Front wheels reducers oil	3-38	V					V	<<<	<<<	
Wear of front axle brake discs									C**	
Front wheels reducers universal joint									C**	
Front wheels reducers clearance									C**	
REAR AXLE										
Rear wheels reducers pivots	3-25	G		G	<<<	<<<	<<<	<<<	G/C**	
Rear axle oscillation	3-25	G		G	<<<	<<<	<<<	G/C**	<<<	
Rear axle differential oil level	3-28	C			C	<<<	<<<	<<<	<<<	
Rear wheels reducers oil level	3-28	C			C	<<<	<<<	<<<	<<<	
Rear axle differential oil	3-35	V				V	<<<	<<<	<<<	
Rear wheels reducers oil	3-38	V					V	<<<	<<<	
Wearing of rear axle brake discs									C**	
Rear wheels reducers universal joint									C**	
Rear wheels reducers clearance									C**	
CHASSIS										
Structure							C**	<<<	<<<	
Bearings and articulation rings								C**	<<<	
ATTACHMENTS										
Forks wear		C**				C**	<<<	<<<	<<<	
Attachment carriage							C**	<<<	<<<	
Condition of attachments							C**	<<<	<<<	
LIFT TRUCK										
Tow the lift truck	3-42									XXX
Sling the lift truck	3-43									XXX
Transport the lift truck on a platform	3-44									XXX

(*): Every 10 hours during the first 50 hours, then once at 250 hours.
(**): Consult your dealer.

A - DAILY OR EVERY 10 HOURS SERVICE

A1 - I.C. ENGINE OIL LEVEL

CHECK

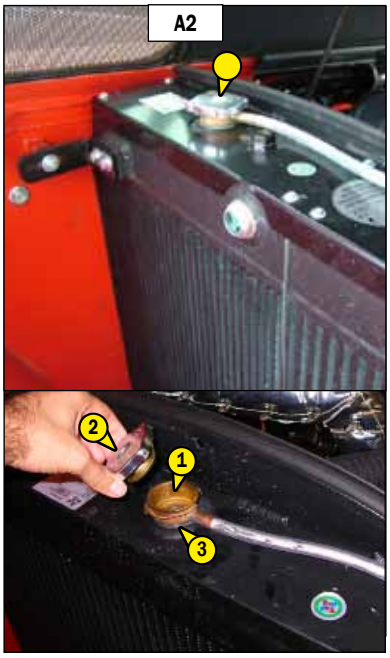


Place the lift truck on level ground with the I.C. engine stopped, and let the oil drain into the sump.

- Open the I.C. engine bonnet.
- Remove the dipstick 1 (fig. A1).
- Clean the dipstick and check the correct level between the two notches.
- If necessary, add oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by the filler port 2 (fig. A1).
- Check visually that there is no leakage or seepage of oil in the I.C. engine.

A2 - COOLING LIQUID LEVEL

CHECK



Place the lift truck on level ground with the I.C. engine stopped, and allow the I.C. engine to cool.

- Open the I.C. engine bonnet.
- Check the correct level in the middle of gauge 1 (fig. A2).
- If necessary, add cooling liquid (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL).
- Slowly turn the cap of the radiator 2 (fig. A2) up to the safety stop.
- Allow the pressure and the steam to escape.
- Press down and turn the cap so as to release it.
- Add cooling liquid via filler port 3 (fig. A2) up to the middle of gauge 1 (fig. A2).
- Lubricate slightly the filler neck in order to facilitate the setting and the removal of the radiator cap.
- Check visually that there is no leakage in the radiator and pipes.

To avoid any risk of spraying or burning, wait until the I.C. engine has cooled down before removing the cooling circuit filler plug. If the cooling liquid is very hot, add only hot cooling liquid (80 °C). In an emergency, you can use water as a cooling liquid, then change the cooling circuit liquid as soon as possible (see: 3 - MAINTENANCE: F1 - COOLING LIQUID).

A3 - FUEL LEVEL

CHECK

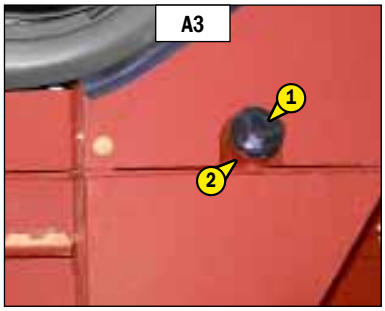
Keep the fuel tank full, to reduce as much as possible any condensation due to the atmospheric conditions.

- Remove cap 1 (fig. A3).
- Fill the fuel tank with clean fuel (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL), filtered through a strainer or a clean, lint free cloth, through filler port 2 (fig. A3).
- Put the cap back 1 (fig. A3).
- Check visually that there is no leakage in the tank and pipes.

Never smoke or approach with a flame during filling operations or when the tank is open. Never refill while I.C. engine is running.

The fuel tank is degassed via the filler plug. When changing it, always use an original part, with degassing hole.

NOTE: A locking tank cap is available as an OPTION.



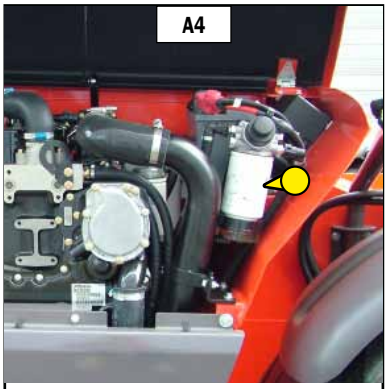
MHT 780 HT-E3 / MHT 1076 LT-E3

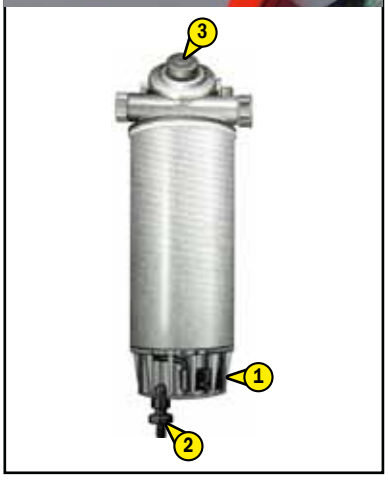
MHT 860 LT-E3 / MHT 950 LT-E3

A4 - FUEL PRE-FILTER

CHECK

- Open the I.C. engine bonnet.
- Check for the presence of water in the pre-filter bowl 1 (fig. A4/2) and empty it out if necessary.
- Place a receptacle under the drain plug 2 (fig. A4/2) and loosen it in two to three thread turns.
- Allow the diesel fuel to flow out until it is free from impurities and water.
- Tighten the drain plug.
- Pressurise the circuit with the hand pump 3 (fig. A4/2).





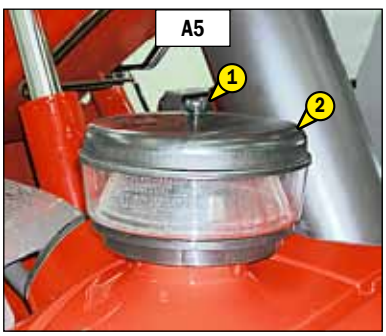
A5 - CYCLONIC PREFILTER

CLEAN

The cleaning interval is given as a guide, however the pre-filter must be emptied as soon as impurities reach the MAX. level on the tank.

- Loosen nut 1 (fig. A5), remove cover 2 (fig. A5) and empty the tank.
- Clean the pre-filter unit with a clean dry cloth and reassemble the unit.

When cleaning, take care not to let impurities into the dry air filter.



A6 - TYRES PRESSURE AND WHEEL NUTS TORQUE

CHECK

- Check the condition of the tyres, to detect cuts, protuberances, wear, etc.
- Check the torque load of the wheel nuts. Non compliance with this instruction can cause damage and rupture to the wheel bolts and distortion to the wheels.

  Wheel nuts tightening torque
  - Front tyres: 630 N.m ± 15%
  - Rear tyres: 630 N.m ± 15%
- Check and adjust the tyre pressures if necessary (see: 2 - DESCRIPTION: FRONT AND REAR TYRES).

Check that the air hose is correctly connected to the tyre valve before inflating and keep all persons at a distance during inflation. Respect the recommended tyre pressures given.

NOTE: There is an OPTIONAL wheel toolkit and anti-puncture kit.

A7 - BOOM PADS

CLEAN - GREASE

To be carried out every 10 hours during the first 50 hours service, then once at 250 hours.

- Extend the boom completely.
- With a brush, apply a coat of grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) on the 4 sides of the telescope(s) (fig. A7).
- Telescope the boom several times in order to spread the coat of grease evenly.
- Remove the surplus of grease.

If the lift truck is used in an abrasive environment (dust, sand, coal...) Use lubricating varnish (MANITOU reference: 483536). In this respect, consult your dealer.

- These tests are essential for checking the correct operation and adjustment of the different components of the device.

Use the test button only when requested to do so, performing short presses (less than 1 second) and long presses (2 seconds) as instructed. If in doubt during the test procedure, exit cleanly by short pressing the "BUCKET" MODE or "SUSPENDED LOAD" MODE button .

Long press on the test button.

STAGE 1

- An audible beep.
- First green led flashing.
- Test button lit.

- Place the lift truck without any attachment, with the jib fully retracted and raised.

Short press the test button.

TEST OK
- One audible beep and progresses to stage 2.

TEST NOT OK
- Two audible beeps and lighting of the fault warning light .
- Exit test mode.
- Go to stage 4.

STAGE 2

- First green led continuously lit.
- Second green led flashing.
- Test button lit.

- Lower the jib with the engine running at full revs and the hydraulic control at the maximum setting. Lowering slows until movement is cut-off.

Short press the test button.

TEST OK
- One audible beep and progresses to stage 3.

TEST NOT OK
- Two audible beeps and lighting of the fault warning light .
- Exit test mode.
- Go to stage 4.

STAGE 3

- First and second green leds continuously lit.
- Third green led flashing.
- Test button lit.

- Lower the jib until the movement is cut-off.
- Request the following, in order:a reverse tilt, a forward tilt (dumping) and a telescope extension. None of these 3 movements should be possible.

Short press the test button.

TEST OK
- Conformity of aggravating movement cut-off.
- Exit test mode. All the LEDs will light for 2 seconds and an audible beep will be sounded.

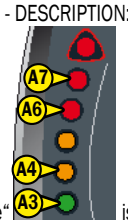
TEST NOT OK
- Fault warning light comes on .
- Exit test mode.
- Go to stage 4.

STAGE 4

- The fault warning light remains permanently on until the error is repaired.

- The fault indicator and a beep indicate a fault.
- Press the button briefly to view the error code.
- If there are several error codes, press the button briefly several times to loop through the error codes.

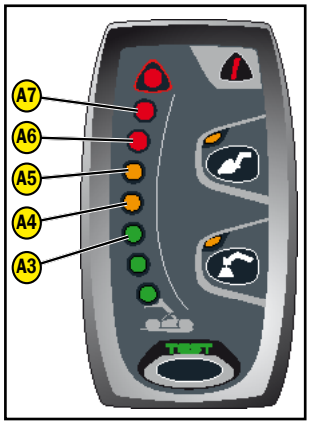
NOTE: A defective fuse can generate several error codes. If this is the case, check the fuses (see: 2 - DESCRIPTION: 11 - FUSES AND RELAYS IN THE CAB)



- If error code" is displayed", the problem may be resolved by resetting the longitudinal stability limiter and warning device (see: 3 - MAINTENANCE: G - OCCASIONAL MAINTENANCE).
- Contact your dealer, stating the error code or error codes (see following table).

NOTE: For the stage 3 test, specify the non-conforming aggravating hydraulic movements, if necessary.

The error codes are indicated by leds A3 to A7 on the warning device and longitudinal stability limiter.



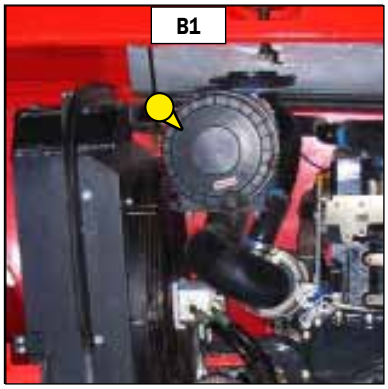
ERROR CODES					
DESIGNATIONS	LEDS				
	A7	A6	A5	A4	A3
Regulating fault (fault detected during the test).	☀	☀	☀	☀	☀
Lowering regulating valve fault.	☀	☀	☀	☀	○
Safety valve cut-off fault (fault detected during the test).	☀	☀	☀	○	☀
Safety valve fault.	☀	☀	☀	○	○
Gauge calibration fault (fault detected during the test). **the problem may be resolved by resetting the longitudinal stability limiter and warning device (see: 3 - MAINTENANCE: G - OCCASIONAL MAINTENANCE).**	☀	☀	○	☀	☀
Angle calibration fault (fault detected during the test).	☀	☀	○	☀	○
Inclination cut-off valve fault.	☀	☀	○		☀
Strain gauge fault.	☀	○	☀	☀	☀
Jib angle sensor fault.	☀	○	☀	☀	○
Telescope or attachment control fault.	☀	○	☀	○	☀
Telescope retracted senor fault.	☀	○	☀	○	○
Computer earth output fault.	☀	○	○	☀	☀
Aggravating hydraulic movement cut-off disable fault.	☀	○	○	☀	○
Stability indicator fault.	○	☀	☀	☀	○
Electronic handling controller fault.	○	☀	☀	○	☀
Hydraulic control lever control setting fault.	○	☀	☀	○	○
Transmission cut-off output fault.	○	☀	○	☀	☀
Electronic handling controller supply fault.	○	☀	○	○	☀
Telescope retracted sensor fault (fault detected during the test).	○	☀	○	○	
Forward tilt cut-off valve fault. (according to model)	○	○	☀	☀	☀
Jib head electrovalve fault. (OPTION)	○	○	☀	☀	
Attachment easy hydraulic connection fault button. (OPTION)	○	○	☀	○	☀
Electrovalve attachment hydraulic control and electrical jib provision fault button. (OPTION)	○	○	☀	○	○
Attachment forced operation indicator fault. (OPTION)	○	○	○	☀	☀
Electric handling controller 10V output fault.	○	○	○	☀	○
Forced operation button fault. (OPTION)	○	○	○	○	☀

B - EVERY 50 HOURS SERVICE

Carry out the operations described previously as well as the following operations.

B1 - DRY AIR FILTER CARTRIDGE

CHECK - CLEAN


B1

In case of use in a heavily dust laden atmosphere, there are pre-filtration cartridges (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS). Also, the checking and cleaning periodicity of the cartridge must be reduced.

If the clogging indicator light comes on, this operation must be carried out as quickly as possible (1 hour maximum). The cartridge must not be cleaned more than seven times, after which the cartridge must be changed. Never use the lift truck without an air filter or with a damaged air filter.

- For the disassembly and reassembly of the cartridge, see: 3 - MAINTENANCE: D3 - DRY AIR FILTER CARTRIDGE.
- Clean the filter cartridge using a compressed air jet (max. pressure 3 bar) directed from the top to the bottom and from the inside towards the outside at a minimum distance of 30 mm from the cartridge wall.
- Cleaning is completed when there is no more dust on the cartridge.

Respect the safety distance of 30 mm between the air jet and the cartridge to avoid tearing or making a hole in the cartridge. The cartridge must not be blown anywhere near the air filter box. Never clean the cartridge by tapping it against a hard surface. Your eyes must be protected during this intervention.

- Clean the cartridge seal surfaces with a damp, clean lint-free cloth and grease with a silicone lubricant (MANITOU reference: 479292).
- Check visually the outer condition of the air filter and its mounts. Verify the condition of the hoses and their mounts also.

Never clean the dry air filter cartridge by washing it in liquid. Do not clean by any means the safety cartridge located inside the filter cartridge, change it for a new one if it is clogged or damaged.

B2 - RADIATOR CORES

CLEAN

The compressed air can cause accidents. While using compressed air, wear a protective device for the face protective clothing. The maximum pressure of the compressed air at the nozzle outlet must be 2 bar (30 PSI).

B2/1

Check the radiator (water Fig. B2/1; oil Fig. B2/2)
for: damaged fins, corrosion, dirt, grease, insects, leaves, oil or other debris.

Direct the compressed air jets in the direction of the arrows.
Keep the air nozzle at a distance of about 6mm from the radiator fins.
Also use pressurized water to soften mud or solid debris.
The maximum water pressure must be less than 2.7 bar (40 PSI).
To remove oil and grease, use a degreaser and steam. Clean both sides of the radiator mass.
Wash the radiant mass with detergent and boiling water. Rinse the radiant mass thoroughly with clean water.
After cleaning the radiator/s, start the I.C. engine, keeping it running at minimum for about five minutes.
Bring the I.C. engine to maximum operating speed without load (this operation helps to remove debris and to dry the radiant mass). Gradually reduce the I.C. engine speed to the minimum and stop it.
Use a light to check behind the radiant mass to see if it is clean.
If necessary, clean again.
Check to see if fins are damaged. Bent fins can be straightened using a “comb”.
Check to make sure the following elements are in good condition. welded parts, mounting brackets, piping, connections, clamps and gaskets.
Carry out repairs, if necessary.

B2/2

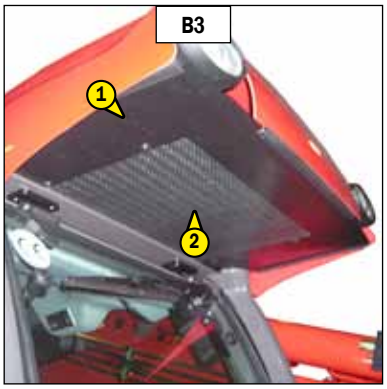
B3 - CONDENSER CORE (OPTION AIR CONDITIONING)

CHECK - CLEAN

In a polluting atmosphere, clean the radiator core every day. Do not use a water jet or high-pressure steam as this could damage the condenser fins.

- Remove the protective grid 1 (fig. B3) and clean it if necessary.
- Visually check whether the condenser 2 (fig. B3) is clean and clean it if necessary.
- Clean the condenser using a compressed air jet aimed in the same direction as the air flow (fig. B3).

NOTE: So as to enhance the cleaning, carry out this operation with the fans running.

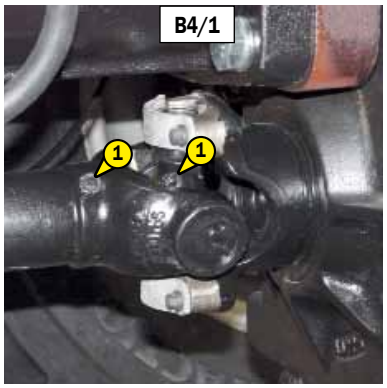


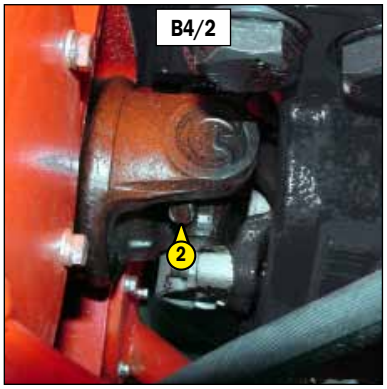
B4 - TRANSMISSION UNIVERSAL JOINT

GREASE

- Clean and lubricate the following points with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) and remove the surplus of grease.

1 - Lubricators of the universal joint Transmission/Front axle (3 lubricators) (fig. B4/1).
2 - Lubricators of the universal joint Transmission/Rear axle (3 lubricators) (fig. B4/2).





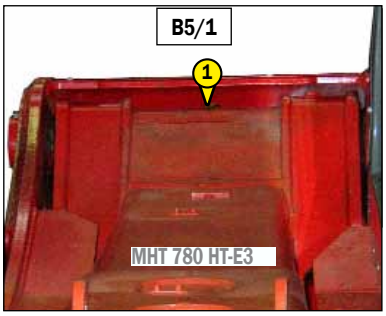
To be carried out weekly, if the lift truck has been operated for less than 50 hours during the week.

In the event of prolonged use in an extremely dusty or oxidising atmosphere, reduce this interval to 10 working hours or every day.

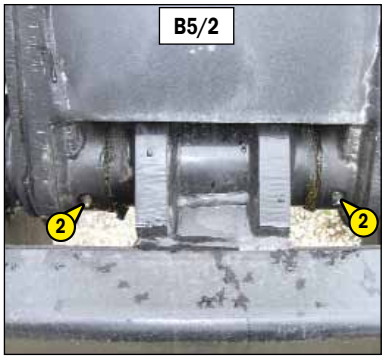
- Clean and lubricate the following points with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) and remove the surplus of grease.

1 - Lubricators of the boom axle (2 lubricators) (fig. B5/1).
2 - Lubricators of the carriage axle (2 lubricators) (fig. B5/2).
3 - Lubricator of the tilt cylinder foot axle (1 lubricator) (fig. B5/3).
4 - Lubricator of the tilt cylinder head axle (1 lubricator) (fig. B5/4).
5 - Lubricator of the lifting cylinder foot axle (1 lubricator) (fig. B5/5).
6 - Lubricator of the lifting cylinder head axle (1 lubricator) (fig. B5/6).
7 - Lubricator of the compensation cylinder foot axle (1 lubricator) (fig. B5/67).
8 - Lubricator of the compensation cylinder head axle (1 lubricator) (fig. B5/8).

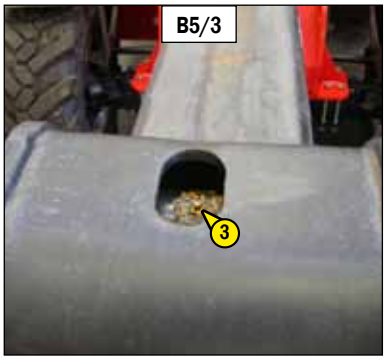
B5/1



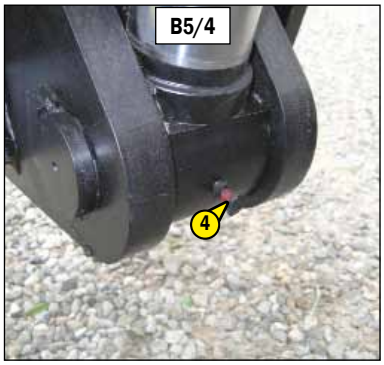
B5/2



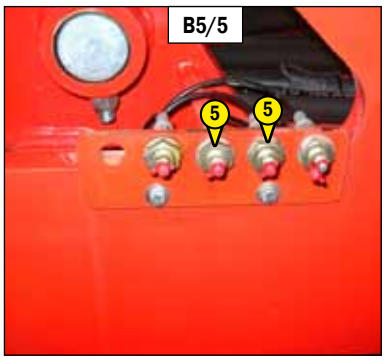
B5/3



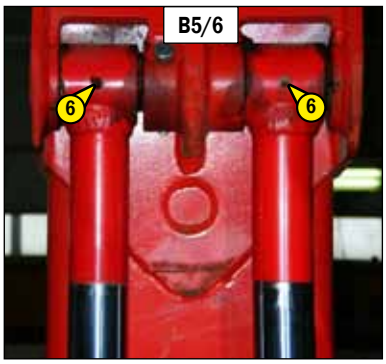
B5/4



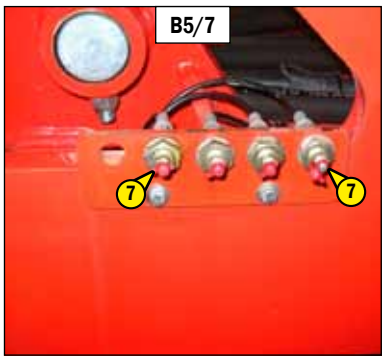
B5/5



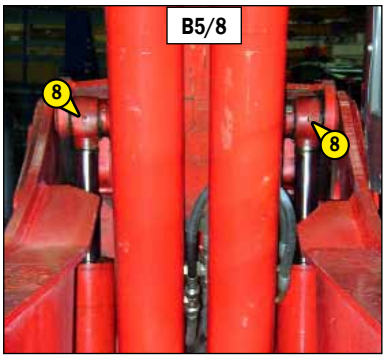
B5/6



B5/7



B5/8



B6 - HYDRAULIC OIL LEVEL

CHECK

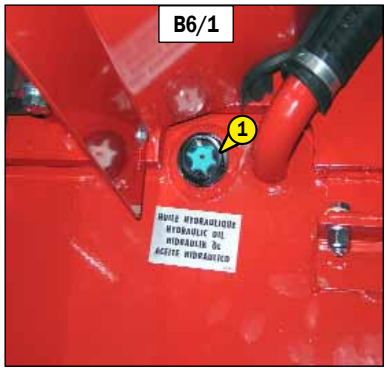
Place the lift truck on level ground with the I.C. engine stopped, and the boom retracted and lowered as far as possible.

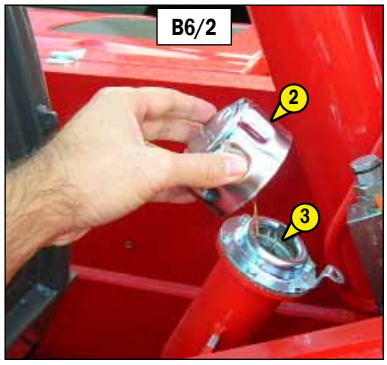
- Refer to gauge 1 (fig. B6/1).
- The oil level is correct when it is at the level of the red point.
- If necessary, add oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL).
- Remove cap 2 (fig. B6/2).
- Add oil by filler port 3 (fig. B6/2).

Use a clean funnel and clean the underside of the oil drum before filling.

- Put the cap back.
- Check visually that there is no leakage in the tank and pipes.

Always maintain the oil level at maximum as cooling depends on the oil flowing through the tank.





B7 - BRAKE OIL LEVEL

CHECK

Place the lift truck on level ground.

- Loosen screw 1 (fig. B7/1) and remove the access panel for braking oil tank and windscreen washer tank 2 (fig. B7/1).
- The level is correct when it is at the MAX. level in tank 3 (fig. B7/2)
- If necessary, add oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by the filler port.
- Pivot the tank 3 (fig. B7/2) to access the filler cap 4 (fig. B7/2).
- Check visually that there is no leakage in the tank and pipes.

If the braking oil level is abnormally low, consult your dealer.

B8 - WINDSCREEN WASHER LIQUID LEVEL

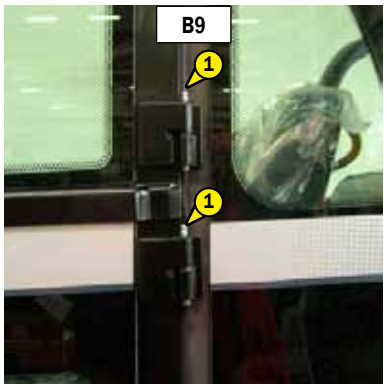
CHECK

- Loosen screw 1 (fig. B8/1) and remove the access panel for braking oil tank and windscreen washer tank 2 (fig. B8/1).
- Visually check the level.
- If necessary add windscreen washer liquid (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by filler port 3 (fig. B8/2).

B9 - CAB DOOR

GREASE

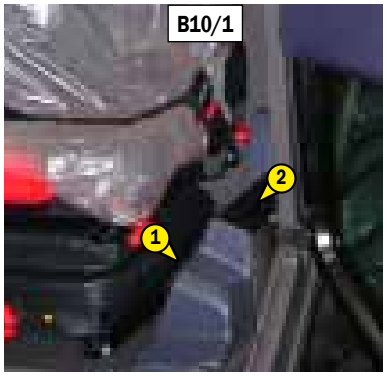
- Clean and lubricate the points 1 (4 lubricators) (fig. B9) with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) and remove the surplus of grease.



B10 - CAB VENTILATION FILTER (OPTION AIR CONDITIONING)

CLEAN

- Unscrew the thumbscrew 1 (fig. B10/1) and remove protective guard back 2 (fig. B10/1).
- Lift out cabin ventilation filter 3 (fig. B10/2).
- Clean the filter using a compressed air jet.
- Check its condition and change if necessary (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Refit the filter and protective casing.



B11 - FRONT AND REAR WHEEL REDUCER PIVOTS

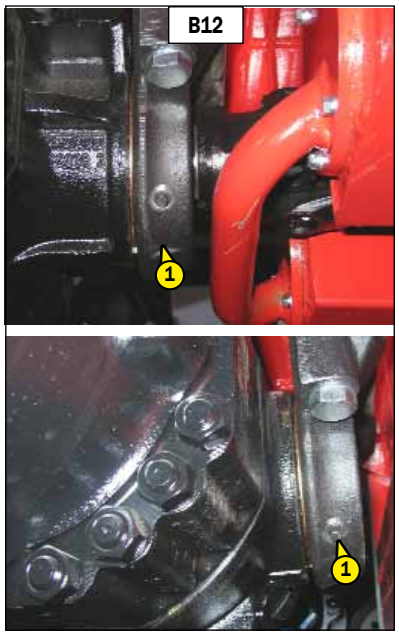
GREASE

- Clean and lubricate the points 1 (8 lubricators) (fig. B11) with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) and remove the surplus of grease.

B12 - REAR AXLE OSCILLATION

GREASE

- Clean and lubricate the points 1 (2 lubricators) (fig. B12) with grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) and remove the surplus of grease.

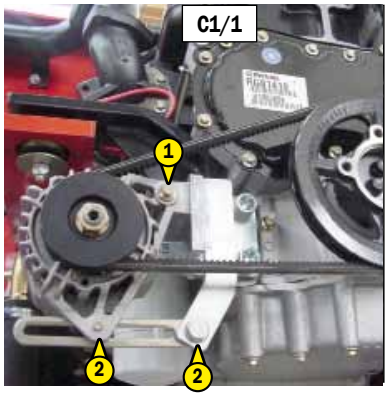


C - EVERY 250 HOURS SERVICE

Carry out the operations described previously as well as the following operations.

C1 - ALTERNATOR/CRANKSHAFT BELT TENSION

CHECK - ADJUST



- Open the I.C. engine bonnet.
- Unscrew the fastening screws 1 (fig. C1/1).
- Lay down the protective guard 2 (fig. C1/1).
- Check the belt for signs of wear and cracks and change if necessary (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Check the belt tension between the pulleys of the crankshaft and of the alternator.
- Under a normal pressure exerted with the thumb (45 N), the belt should move approximately 10 mm.
- Carry out adjustments if necessary.
- Untighten screws 3 (fig. C1/2) by two to three thread turns.
- Swivel the alternator assembly so as to obtain the belt tension required.
- Retighten screws 3 (fig. C1/2) (tightening torque 22 N.m).
- Put the protective guard back 2 (fig. C1/1).

If the alternator belt has to be changed, check the tension again after the first 20 hours of operation.

C2 - ALTERNATOR/CRANKSHAFT BELT TENSION

CHECK - ADJUST

For this operation, we advise you to use the MANITOU tension meter (fig. C2/1) reference 167418.

- Open the I.C. engine bonnet.
- Unscrew the fastening screws 1 (fig. C2/1).
- Lay down the protective guard 2 (fig. C2/1).
- Check the belt for signs of wear and cracks and change if necessary (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Check the belt tension between the pulleys of the crankshaft and of the alternator.

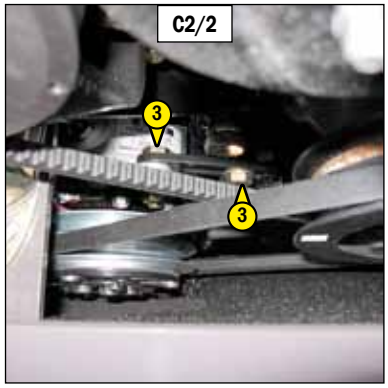
- Carry out adjustments if necessary.
- Untighten screws 3 (fig. C2/2) by two to three thread turns.
- Swivel the alternator assembly so as to obtain the belt tension required.
- Retighten screws 3 (fig. C2/2) (tightening torque 22 N.m).
- Put the protective guard back 2 (fig. C2/1).

If the alternator belt has to be changed, check the tension again after the first 20 hours of operation.

C2/1

C2/1

C2/2

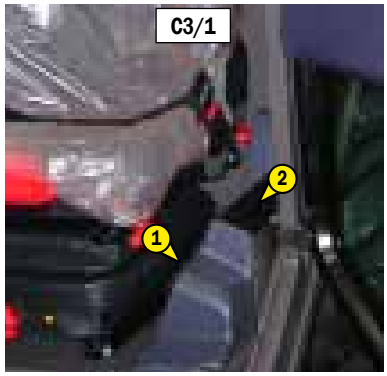


C3 - CAB VENTILATION FILTER (OPTION AIR CONDITIONING)

CHANGE

- Unscrew thumbscrew 1 (fig. C3/1) and remove protective guard back 2 (fig. C3/1).
- Lift out cabin ventilation filter 3 (fig. C3/2) and replace it with a new one (see: 3 - MAINTENANCE: FILTERS AND BELTS).
- Refit the protective casing.

C3/1



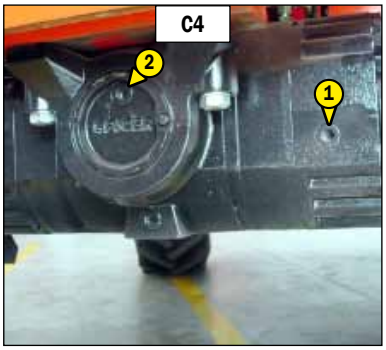
C3/2

C4 - FRONT AND REAR DIFFERENTIAL OIL LEVEL

CHECK

Place the lift truck on level ground with the I.C. engine stopped.

- Remove level plug 1 (fig. C4). The oil should be flush with the edge of the hole.
- If necessary, add oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by the filler port 2 (fig. C4).
- Replace and tighten the level plug 1 (fig. C4) (tightening torque 34 to 49 N.m).
- Repeat this operation for the rear axle differential.

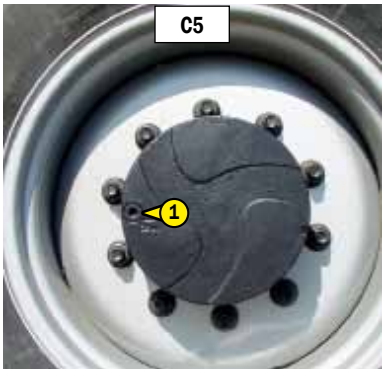


C5 - FRONT AND REAR WHEELS REDUCERS OIL LEVEL

CHECK

Place the lift truck on level ground with the I.C. engine stopped.

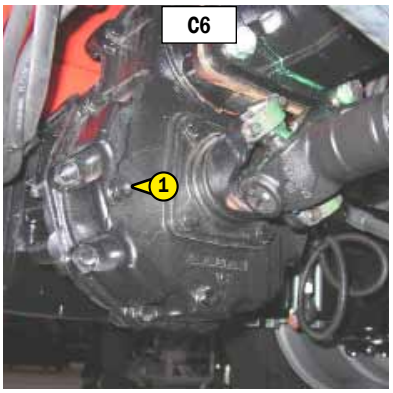
- Check the level on each front wheel reducer.
- Place level plug 1 (fig. C5) in the horizontal position.
- Remove the level plug, the oil should be flush with the edge of the hole.
- If necessary, add oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by the same hole.
- Replace and tighten the level plug 1 (fig. C5) (tightening torque 34 to 49 N.m).
- Repeat this operation on each rear wheel reducer.



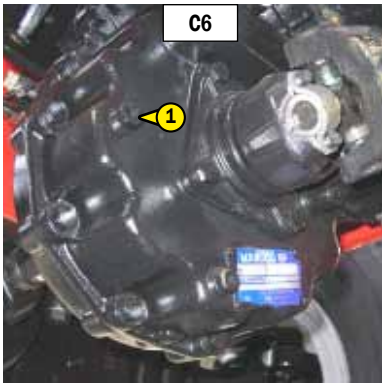
C6 - CHECK THE TRANSMISSION BOX OIL

CHECK

Position the lift truck on a horizontal surface, with the combustion engine switched off.
- Remove level plug 1 (Fig. C6), the oil must reach the level of the opening.
- Top up with oil, if necessary (See the “LUBRICANTS” Table).
- Refit and retighten level plug 1 (Fig. C6).



MHT 780 HT-E3
MHT 860 LT-E3
MHT 950 LT-E3



MHT 1072 LT-E3

D - EVERY 500 HOURS SERVICE

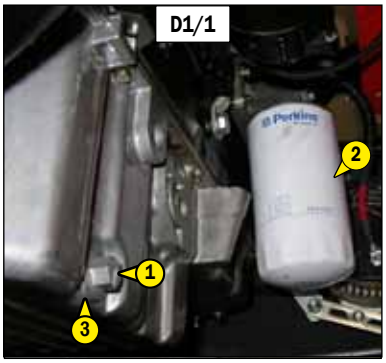
Carry out the operations described previously as well as the following operations.

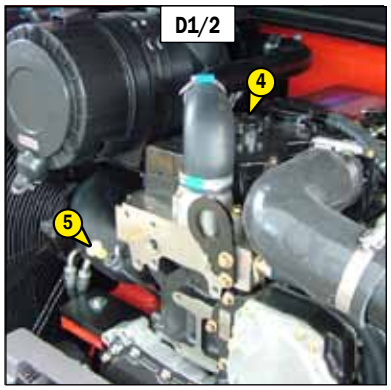
D1 - I.C. ENGINE OIL

DRAIN

D2 - I.C. ENGINE OIL FILTER

CHANGE





Place the lift truck on level ground, let the I.C. engine run at idle for a few minutes, then stop the I.C. engine.

DRAINING THE OIL

- Open the I.C. engine bonnet.
- Place a container under drain plug 3 (fig. D1/1) and unscrew the plug 1 (fig. D1/1).

Dispose of the drain oil in an ecological manner.

REPLACEMENT OF THE FILTER

Remove oil filter 3 (Fig. D1/1), reject the filter and its gasket.
Wipe the filter support with a clean cloth.
Lubricate the new gasket lightly.
Fit a new filter having identical specifications (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS)

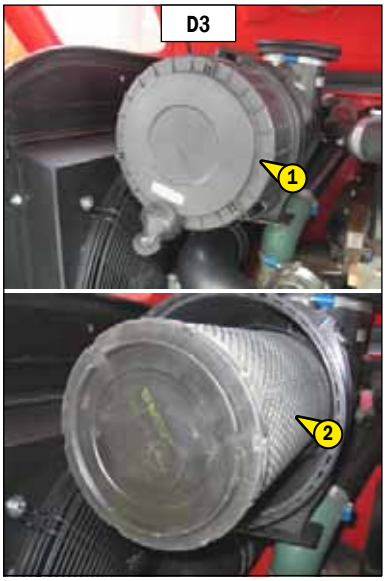
Tighten the oil filter by hand pressure only and lock the filter in place by a quarter turn.

FILLING UP THE OIL

Refit and tighten drain plug 1 (Fig. D1/1).
Fill oil as shown in the Table (“LUBRICANTS”) through filler hole 4 (Fig. D1/2).
Wait for a few minutes to allow the oil to flow down into the pan.
Start up the engine and leave it running for a few minutes.
Check for leakage from the drain hole and the oil filter.
Stop the engine, wait for a few minutes and check the level using rod 5 (Fig. D1/2).
Top up, if necessary.

D3 - DRY AIR FILTER CARTRIDGE

CHANGE



In case of use in a heavily dust laden atmosphere, there are pre-filtration cartridges, see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS. Also, the checking and cleaning periodicity of the cartridge must be reduced (up to 250 hours in a heavily laden dust atmosphere and with pre-filtration).

Change the cartridge in a clean location, with the I.C. engine stopped. Never operate the lift truck with the air filter removed or damaged.

- Open the I.C. engine bonnet.
- Loosen the bolts and remove cover 1 (fig. D3).
- Gently remove the cartridge 2 (fig. D3), taking care to avoid spilling the dust.
- Leave the safety cartridge in place.
- The following parts must be cleaned with a damp, clean lint-free cloth.
    - The inside of the filter and cover.
    - The inside of the filter inlet hose.
    - The gasket surfaces in the filter and in the cover.
- Check pipes and connections between the air filter and the I.C. engine and the connection and state of the clogging indicator on the filter.
- Before mounting check the state of the new cartridge (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Introduce the cartridge into the filter axis and push it in, pressing the edges and not the middle.
- Reassemble the cover, guiding the valve downwards.

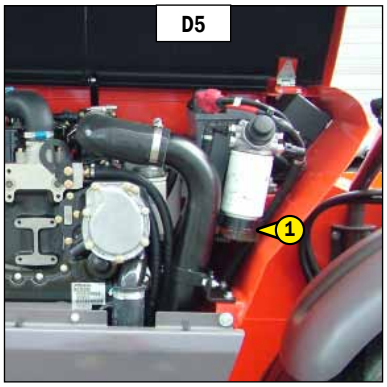
D4 - ENGINE BASE VENT FILTER

CHANGE

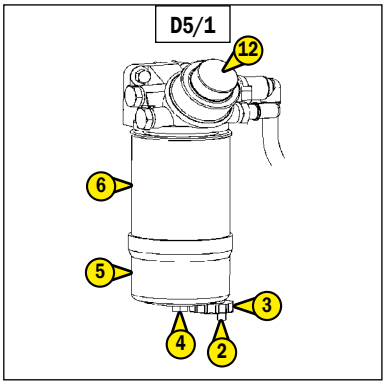
Make sure the engine is stopped before carrying out maintenance or repairs on it.
Place a container under the vent cartridge 1 (Fig. D4).
Using a suitable tool, remove the engine base vent cartridge 1 (Fig..D4).
Lubricate the O-ring of the new cartridge with clean engine oil.
Insert the new cartridge (see Table “FILTER ELEMENTS AND BELTS”) and screw it in manually by applying a torque not greater than 12 Nm.
Dispose off the used cartridge and oil contained in it in accordance with the regulations in force in the country of use.

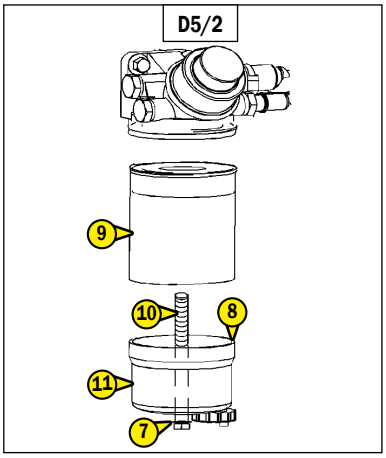
D5 - FUEL PRE-FILTER

CHANGE



- Place a suitable container under the fuel filter with water separator 1 (Fig. D5) to collect the liquid that flows out.
- Clean the outer surfaces of the filter thoroughly.
- Install a suitable tube on outlet 2 (Fig. D5/1).
- Open drainage outlet 3 (Fig. D5/1) and let the liquid drain out completely into the container.
- Close the drainage opening 3 (Fig. D5/1) tightening it only manually and remove tube 2 (Fig. D5/1).
- Slacken screw 4 (Fig. D5/1) holding the glass cup 5 steady (Fig.D6/1).
- Remove the glass cup 5 (Fig. D5/1) from cartridge 6 (Fig. D5/1).
- Use a suitable tool to remove cartridge 6 (Fig. D5/1).
- Dispose off the used cartridge 6 (Fig. D5/1) and the old gaskets 7-8 (Fig. D5/2) according to the regulations in force in the country of use.
- Clean the glass cup 5 (Fig. D5/1) using a clean cloth that does not leave residues.
- Make sure dirt cannot enter the new fuel filter (see Table “FILTER ELEMENTS AND BELTS”). Do not lubricate the sealing ring on the new fuel filter.
- Insert the new filter 9 (Fig. D5/2).
  Do not use a tool to insert the filter.
  Tighten the filter manually.
- Insert the new sealing ring 7 (Fig. D5/2) on fixing screw 10 (Fig.D5/2).
- Insert the new sealing ring 8 (Fig. D5/2) on glass cup 11 (Fig.D5/2).
- Align the glass cup 11 (Fig. D5/2) with filter 9 (Fig. D5/2).
- Insert fixing screw 10 (Fig. D5/2).
- Remove the container and dispose off the liquid in accordance with the regulations applicable in the country of use.





Manual priming pump (on fuel filter with water separator)

To bleed air from the supply system, proceed as follows:
- Make sure the supply system is in good working condition.
- Activate priming pump 12 (Fig. D5/1) until it is blocked.
- The supply system must now be primed and the engine must be able to start up.
- Activate the starter motor.

Once the engine starts up, let it run at minimum speed without load for at least five minutes immediately after having bled the air from the supply system.
Note: This will ensure that no air is present in the supply system.

D6 - FUEL FILTER

CHANGE

The combustible materials of certain engine components (such as the seals) can be extermely dangerous if burnt. Never allow such material to come in contact with the skin or the eyes.
Check to make sure the ignition key is turned off before carrying out maintenance or repairs on the fuel supply system, since the pump will start supplying fuel if the engine is switched on.
Do not let impurities enter the fuel supply system. Before disconnecting a union, clean the surrounding surface carefully. After disconnecting one of the components, fit a suitable cover on all open unions.

Make sure the engine is stationary before carrying out maintenance or repairs on it.
After the engine is stopped, before carrying out maintenance and repair operations on the fuel pipes, wait for 60 seconds to allow pressure t be discharged.
Eliminate leaks, if any, from the supply system.
Replace the fuel piping that has leaks.
- Place a suitable container under the fuel filter unit to collect the fuel that flows out.
- Clean the outer surfaces of the fuel filter thoroughly.
- Use a suitable tool to dismantle the used fuel filter 1 (Fig. D6) from the engine.
- Dispose off the used cartridge and the liquid contained in it in accordance with the regulations in force in the country of use.
- Make sure dirt cannot enter the new fuel filter (see Table “FILTER ELEMENTS AND BELTS”).
  Do not fill the new fuel filter before assembly.
  Do not lubricate the sealing ring on the new fuel filter.
- Insert the new filter.

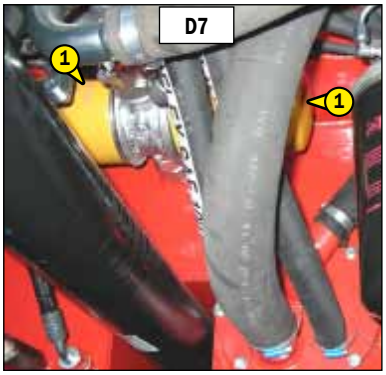
Do not use a tool to insert the filter.
Tighten the filter manually.

Remove the container and dispose off the liquid in accordance with the regulations applicable in the country of use.

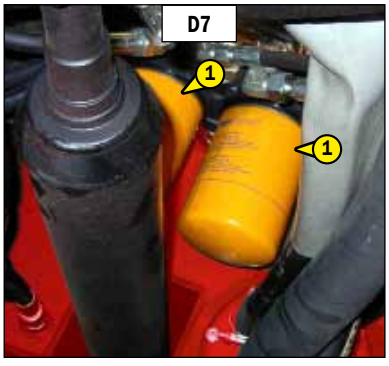
D7 -HYDRAULIC OIL FILTERS (EXHAUST)

CHANGE

Using a box wrench, dismantle the two hydraulic oil filters 1 (Fig. D7) and discard them together with the gaskets.
Wipe the filter supports with a clean cloth that does not leave residue.
Fit the new filters having identical features (see Table “FILTER ELEMENTS AND BELTS”) using only your hands making sure the gasket is positioned correctly after lubricating it.
Start up the lift truck and check for leaks.



MHT 860 LT-E3
MHT 950 LT-E3

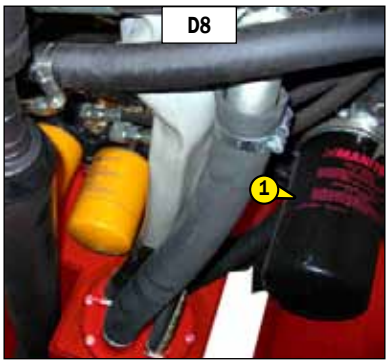


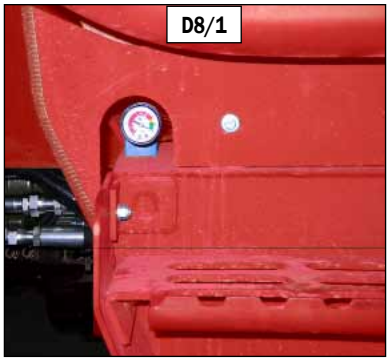
MHT 780 HT-E3
MHT 1072 LT-E3

D8- TRANSMISSION OIL FILTER

CHANGE

Using a collar wrench, remove the transmission oil filter 1 (Fig. D8)
and dispose it off together with the gasket in accordance with the regulations in force in the country of use.
Wipe the filter support with a clean cloth that does not leave residue.
Fit a new filter having identical features (see Table “FILTER ELEMENTS AND BELTS”) using only your hands making sure the gasket is positioned correctly after lubricating it.
Start up the lift truck and check for leaks.
Check the working efficiency of the filter on indicator 2 (Fig. D8/1).

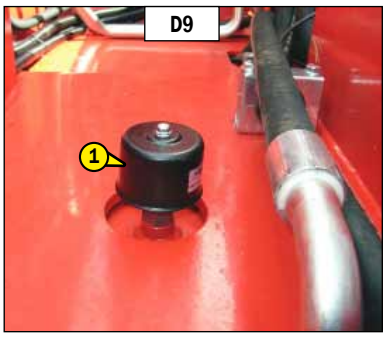




D9- TRANSMISSION AND HYDRAULIC OIL TANK VENT FILTER

CHANGE

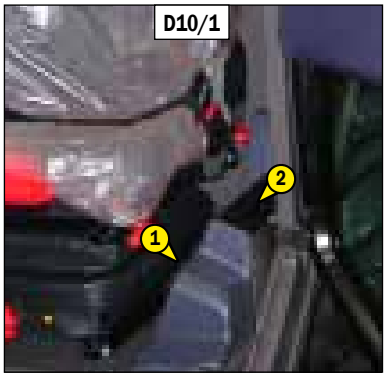
Slacken vent 1 (Fig. D9) on the back of the cab and replace it with a new one having identical features; see Table “Filter elements and belts”).
Fit the new vent, tightening it manually.



D10 - CAB VENTILATION FILTER

CLEAN

- Unscrew thumbscrew 1 (fig. D10/1) remove protective guard back 2 (fig. D10/1).
- Lift out cabin ventilation filter 3 (fig. D10/2).
- Clean the filter using a compressed air jet.
- Check its condition and change if necessary (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Refit the filter and protective casing.



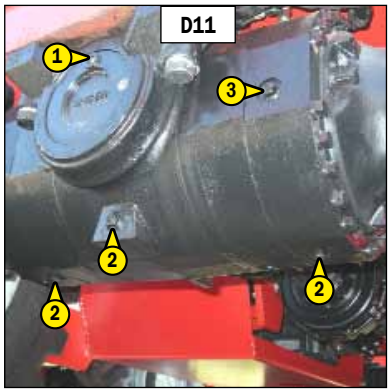
D11 - FRONT AND REAR AXLE DIFFERENTIAL OIL

DRAIN

Place the lift truck on level ground with the I.C. engine stopped and the differential oil still warm.

Dispose of the drain oil in an ecological manner.

Drain out the front axle differential oil.
Place a container under drain plugs 2 (Fig. D11) and let the oil drain out.
Remove level plug 3 (Fig. D11) and filler plug 1 (Fig. D11) to ensure complete drainage.
Refit and tighten plugs 2 (Fig. D11).
Fill oil (see Table “LUBRICANTS”) through filler hole 1 (Fig. D11).
The level is correct when the oil reaches the level hole 3 (Fig. D11).
Check for leakage from the drain plugs.
Refit and tighten level plug 3 (Fig. D11) and refit plug 1 (Fig. D11).
Repeat the operation for the rear axle differential.
Dispose off the used oil according to the regulations in force in the country of use.



E - EVERY 1000 HOURS SERVICE

Carry out the operations described previously as well as the following operations.

E1 - FUEL TANK

CLEAN

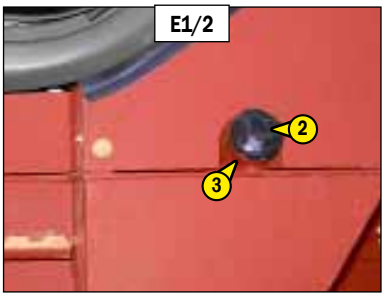
While carrying out these operations, do not smoke or work near a flame.

Place the lift truck on level ground with the I.C. engine stopped.

- Inspect the parts susceptible to leaks in the fuel circuit and in the tank.
- In the event of a leak, contact your dealer.

Never try to carry out a weld or any other operation by yourself, this could provoke an explosion or a fire.

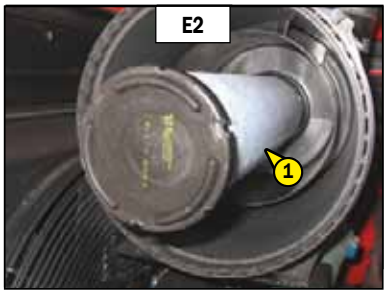
- Place a container under drain plug 1 (fig. E1/1) and unscrew the plug.
- Remove filling plug 2 (fig. E1/2) in order to ensure that the oil is drained properly.
- Rinse out with ten litres of clean diesel through filler port 3 (fig. E1/2).
- Refit and tighten the drain plug (tightening torque 29 to 39 N.m).
- Fill the fuel tank with clean diesel filtered through the filler port.
- Refit the filling cap.
- If necessary, bleed the fuel circuit (see: 3 - MAINTENANCE: G1 - FUEL SYSTEM).



E2 - SAFETY DRY AIR FILTER CARTRIDGE

CHANGE

- For the disassembly and reassembly of the dry air filter cartridge, see: 3 - MAINTENANCE: D3 - AIR FILTER CARTRIDGE.
- Gently remove the dry air filter safety cartridge 1 (fig. E2), taking care to avoid spilling the dust.
- Clean the gasket surface on the filter with a damp, clean lint-free cloth.
- Before mounting, check the state of the new safety cartridge (see: 3 - MAINTENANCE: FILTERS AND BELTS).
- Introduce the cartridge into the filter axis and push it in, pressing the edges and not the middle.



NOTE: The periodicity for changing the safety cartridge is given for information only. It must be changed for every two changes of the dry air filter cartridge.

E3 - HYDRAULIC OIL

DRAIN

E4 - SUCTION OIL STRAINER FOR HYDRAULIC OIL TANK

CLEAN

E5 - FILTER CAP FOR HYDRAULIC OIL TANK

CHANGE

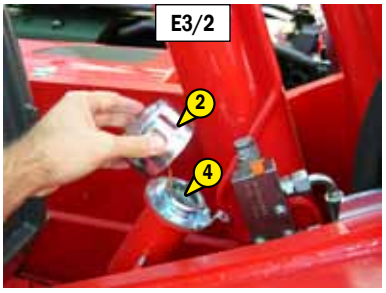
Place the lift truck on level ground with the I.C. engine stopped and telescope boom retracted and lowered as far as possible.

Before any intervention, thoroughly clean the area surrounding the drain plugs and the suction cover on the hydraulic tank.

DRAINING THE OIL

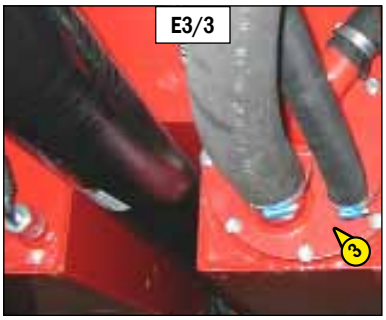
- Place a container under drain plug 1 (fig. E3/1) and unscrew the plug.
- Remove filler cap 2 (fig. E3/2) in order to ensure that the oil is drained properly.

Dispose of the drain oil in an ecological manner.



CLEANING THE STRAINER

- Remove suction cover 3 (fig. E3/3).
- Remove and clean the strainer using a compressed air jet, check its condition and replace if necessary (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).
- Refit the strainer and tighten the suction cover 3 (fig. E3/3) (tightening torque 81 N.m) making sure the seal is in the correct position.

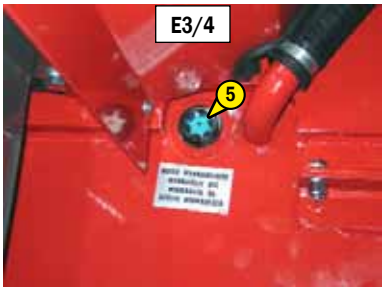


This should be carried out by your dealer after each oil change.
The hydraulic oil used in the circuit must be at least equal in quality to class 8 (according to NAS 1638). Your dealer will be able to clean the hydraulic circuit using an external unit and check the quality of the oil in order to ensure the long life of hydraulic components and particularly of the main pump.

FILLING UP THE OIL

- Clean and refit drain plugs 1 (fig. E3/1) (tightening torque 29 to 39 N.m).
- Fill up with oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by filler port 4 (fig. E3/2).

Use a clean container and funnel and clean the underside of the oil drum before filling.



- Observe the oil level on dipstick 5 (fig. E3/4), the oil level should be at the level of the red point.
- Check for any possible leaks at the drain plugs.
- Replace filler plug 2 (fig. E3/2) with a new filler plug (see: 3 - MAINTENANCE: FILTERS CARTRIDGES AND BELTS).

HYDRAULIC CIRCUIT DECONTAMINATION

- Let the I.C. engine run (accelerator pedal at halfway travel) for 5 minutes without using anything on the lift truck, then for 5 more minutes while using completely the hydraulic movements (except the steering system and the service brakes).
- Accelerate the I.C. engine at full speed for 1 minute, then activate the steering system and the service brakes.
- This operation makes a pollution abatement of the circuit possible through the hydraulic return oil filter.

Questa operazione deve essere effettuata dal vostro concessionario, dopo ogni cambio.
L'olio idraulico utilizzato nel circuito deve essere di qualità almeno uguale a quella della classe 8 (secondo NAS 1638). Il vostro concessionario potrà, grazie ad una centrale esterna, disinquinare il circuito idraulico e controllare la qualità dell'olio, al fine di assicurare la durata dei componenti idraulici e in particolare della pompa principale.

E6 - SEAT BELT

CHECK

SEAT BELT WITH TWO ANCHORING POINTS
- Check the following points:
  - Fixing of the anchoring points on the seat.
  - Cleanness of the strap and the locking mechanism.
  - Triggering of the locking mechanism.
  - Condition of the strap (cuts, curled edges).

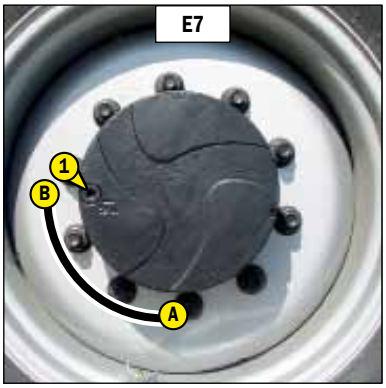
REELED BELT WITH TWO ANCHORING POINTS
- Check the points listed above together with the following points:
  - The correct winding of the belt.
  - Condition of the reel guards.
  - Roller locking mechanism when the strap is given a sharp tug.

NOTE: After an accident, replace the seat belt.

In no event should the lift truck be used if the seat belt is defective (fixing, locking, cuts, tears, etc.). Repair or replace the seat belt immediately.

E7 - FRONT AND REAR WHEELS REDUCERS OIL

DRAIN



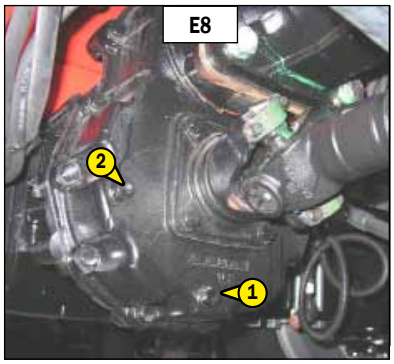
Place the lift truck on level ground with the I.C. engine stopped and the reducers oil still warm.

Dispose of the drain oil in an ecological manner.

- Drain and change each front wheel reducer.
- Place drain plug 1 (fig. E7) in position A.
- Place a container under the drain plug and unscrew the plug.
- Let the oil drain fully.
- Place the drain port in position B, i.e. in a level port.
- Fill up with oil (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) by level port 1 (fig. E7).
- The level is correct when the oil level is flush with the edge of the hole.
- Refit and tighten the drain plug 1 (fig. E7) (tightening torque 34 to 49 N.m).
- Repeat this operation on each rear wheel reducer.

E8 - GEAR BOX OIL

DRAIN



The lift truck must be parked on a level horizontal surface, with the combustion engine switched off and the gear oil still warm.
Place a container under drain plug 1 (Fig. E8) and let all the oil flow out.
Remove level and filler plug 2 (Fig. E8) to make sure the tank is completely drained.
Screw oil drain plug 1 (Fig. E8).
Fill oil (see Table “LUBRICANTS”) through filler hole 2 (Fig. E8).
Check for leakage through drain plugs.
Dispose off the used oil according to the regulations in force in the country of use.

F - EVERY 2000 HOURS OF SERVICE

Carry out the operations described previously as well as the following operations.

F1 - COOLING LIQUID

DRAIN

These operations are to be carried out if necessary or every two years at the beginning of winter. Place the lift truck on level ground with the I.C. engine stopped and cold.

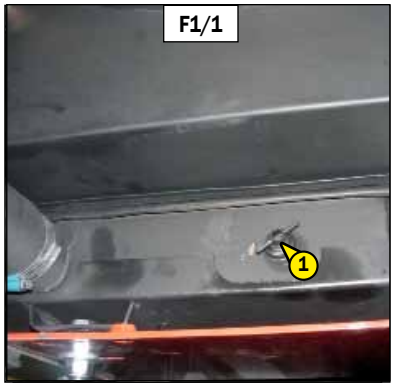
DRAINING THE LIQUID

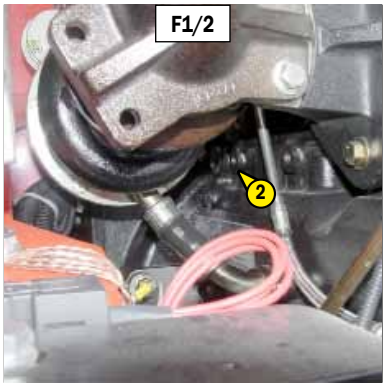
- Open engine hood and lift the battery cover.
- Place a container under hose 1 (fig. F1/1) on the radiator and drain plug 2 (fig. F1/2) of the engine block. Remove the hose and loosen the drain plug.
- Remove filling plug 3 (fig. F1/3) of the radiator.
- Let the cooling circuit drain entirely while ensuring that the ports do not get clogged.
- Check the condition of the hoses as well as the fastening devices and change the hoses if necessary.
- Rinse the circuit with clean water and use a cleaning agent if necessary.

FILLING THE LIQUID

- Refit and tighten the hose 1 (fig. F1/1) and drain plug 2 (fig. F1/2) (tightening torque 40 N.m).
- Slowly fill up the circuit with cooling liquid (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) to the middle of gauge 4 (fig. F1/3) through filler port 5 (fig. F1/3).
- Put back filling plug 3 (fig. F1/3).
- Run the I.C. engine at idle for a few minutes.
- Check for any possible leaks.
- Check the level and refill if necessary.

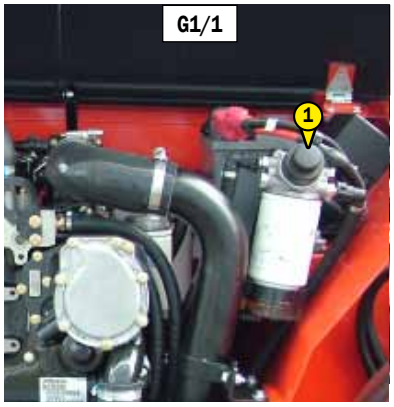
The I.C. engine does not contain any corrosion resistor and must be filled during the whole year with a mixture containing 25% of ethylene glycol-based antifreeze.





G1 - FUEL SYSTEM

BLEED



These operations are to be carried out only in the following cases:

- A component of the fuel system replaced.
- A drained tank.
- Running out of fuel.

Any contact with highly pressurized fuel risks presents a risk of percutaneous penetration or burns. Spraying fuel under high pressure can cause a fire. Failure to follow the inspection and maintenance instructions may result in serious injury.

Never work on the high pressure system. Failure to follow this instruction may result in serious damage to the engine. The high pressure furl system must be adjusted and repaired only by approved and suitably trained technicians.

Ensure that the level of fuel in the tank is sufficient and bleed in the following order:
- Open the I.C. engine bonnet.
- Check the condition of the fuel system
- Operate the hand pump 1 (fig. G1) 50 times to remove air from the low pressure system.

- So the I.C. engine is ready to be started up.
- Turn the I.C. engine over slowly for 5 minutes immediately after bleeding the fuel feed circuit, in order to ensure that the injection pump has been bled thoroughly.

NOTE: If the I.C. engine functions correctly for a short time then stops or functions irregularly, check for possible leaks in the low pressure circuit. If in doubt, contact your dealer.

G2 - WHEEL

CHANGE

In the event of a wheel being changed on the public highway, make sure of the following points:

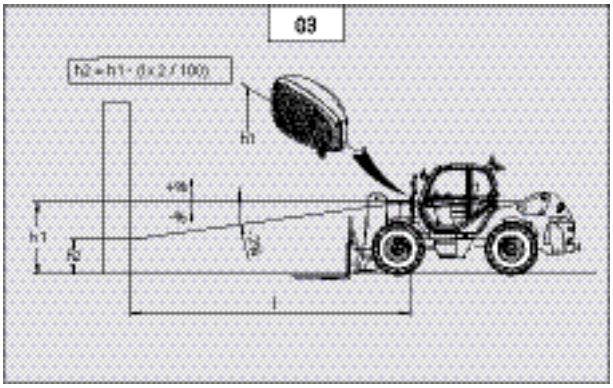
For this operation, we advise you to use the hydraulic jack MANITOU reference 505507 and the safety support MANITOU reference 554772.

- Stop the lift truck, if possible on even and hard ground.
- To pass on stop of lift truck (see: 1 - OPERATING AND SAFETY INSTRUCTIONS: DRIVING INSTRUCTIONS UNLADEN AND LADEN).
- Put the warning lights on.
- Immobilise the lift truck in both directions on the axle opposite to the wheel to be changed.
- Unlock the nuts of the wheel to be changed.
- Place the jack under the flared axle tube, as near as possible to the wheel and adjust the jack (fig. G2/1).
- Lift the wheel until it comes off the ground and put in place the safety support under the axle (fig. G2/2).
- Completely unscrew the wheel nuts and remove them.
- Free the wheel by reciprocating movements and roll it to the side.
- Slip the new wheel on the wheel hub.
- Refit the nuts by hand, if necessary grease them.
- Remove the safety support and lower the lift truck with the jack.
- Tighten the wheel nuts with a torque wrench (see: 3 - MAINTENANCE: A - DAILY OR EVERY 10 HOURS SERVICE for tightening torque).

NOTE: There is an OPTIONAL wheel toolkit and anti-puncture kit.

G3 - FRONT HEADLAMPS

ADJUST



RECOMMENDED SETTING

(as per standard ECE-76/756 76/761 ECE20)

Set to - 2% of the dipped beam in relation to the horizontal line of the headlamp.

ADJUSTING PROCEDURE

- Place the lift truck unloaded and in the transport position and perpendicular to a white wall on flat, level ground (fig. G3).
- Check the tyre pressures (see: 2 - DESCRIPTION: CHARACTERISTICS).
- Place the forward/reverse selector in neutral and release the parking brake.

CALCULATING THE HEIGHT OF THE DIPPED BEAM (H2)

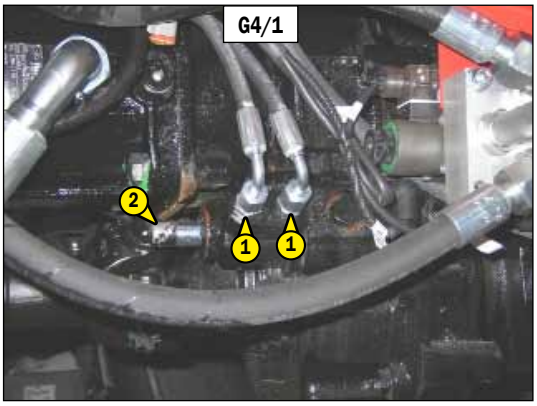
- h1 = Height of the dipped beam in relation to the ground.
- h2 = Height of the adjusted beam.
- l = Distance between the dipped beam and the white wall.

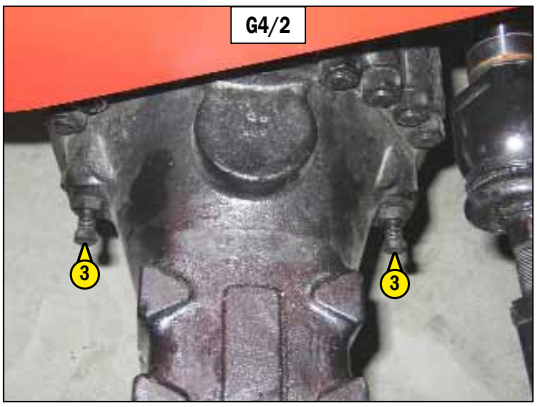
-Towing must be done at very low speeds for short distances.

- Set the reverse gear lever in neutral.
- Disengage the parking brake.
- Switch on the emergency lights.
- Position the gear in neutral manually:
  a) disconnect and plug the hydraulic hoses “1” (Fig. G4/1) from the slow/fast gear box cylinder;
  b) lever on rod “2” (Fig. G4/1) of the gear box to pull it out and bring it to the neutral position (intermediate position between the two successive “clicks”).
- Deactivate the negative brake:
  a) screw nuts with lock nuts 3 (Fig. G4/2) on the two sides of the front axle box until they rest against the piston.
  b) then rotate through one turn.

Attention

The opposite screws must be tightened to the same extent.
- In the absence of hydraulic servo-assistance of direction and brakes, act slowly but firmly on these two commands.
  Avoid sudden, jerky movements.





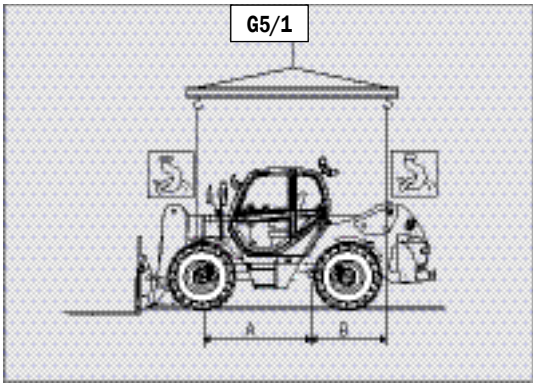
G5 - LIFT TRUCK

SLING

- Take into account the position of the lift truck centre of gravity for lifting (fig. G5/1).

A = 1800 mm	B = 850 mm	MHT 780 HT-E3
A = 1663 mm	B = 1067 mm	MHT 860 LT-E3
A = 1712 mm	B = 1018 mm	MHT 950 LT-E3
A = 1790 mm	B = 1080 mm	MHT 1076 LT-E3

G5/1



- Place the hooks in the fastening points provided (fig. G5/2 and G5/3).

G5/3

G5/2

G6 - LIFT TRUCK ON A PLATFORM

Ensure that the safety instructions connected to the platform are respected before the loading of the truck and that the driver of the means of transport is informed about the dimensions and the weight of t lift truck (see: 2 - DESCRIPTION: CHARACTERISTICS).

Ensure that the platform has got dimensions and a load capacity sufficient for transporting the lift tru Check also the pressure on the contact surface allowable for the platform in connection with the lift tru

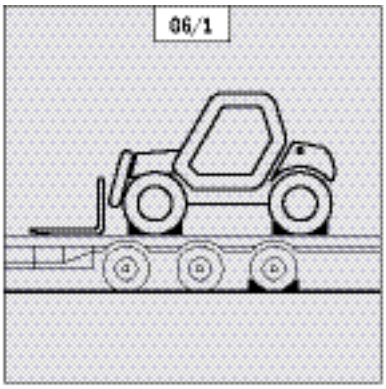
For lift trucks equipped with a turbo-charged I.C. engine, block off the exhaust outlet to avoid rotation of t turbo shaft without lubrication when transporting the vehicle.

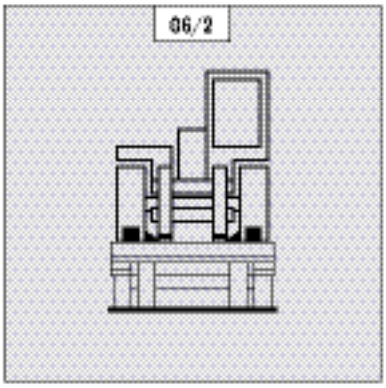
LOAD THE LIFT TRUCK

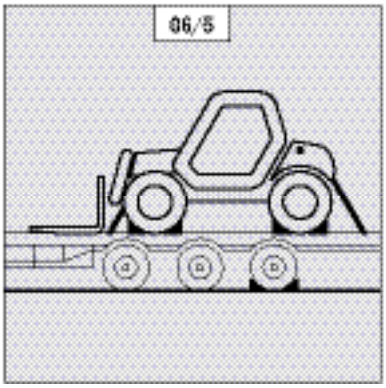
- Block the wheels of the platform.
- Fix the loading ramps so that you obtain an angle as little as possible to lift the lift truck.
- Load the lift truck parallel to the platform.
- Stop the lift truck (see: 1 - OPERATING AND SAFETY INSTRUCTIONS: DRIVING INSTRUCTIOI UNLADEN AND LADEN).

STOW THE LIFT TRUCK

- Fix the chocks to the platform at the front and at the back of each tyre (fig. G6/1).
- Fix also the chocks to the platform in the inside of each tyre (fig. G6/2).
- Secure the lift truck to the platform with sufficiently strong ropes. At the front of the lift truc attach the ropes to the fastening points 1 (fig. G6/3) and at the rear to the towing pin 2 (f G6/4).
- Tighten the ropes (fig. G6/5).







G7 - LONGITUDINAL STABILITY LIMITER AND WARNING DEVICE

RESET

According to the use of the lift truck, the device may require to be periodically reset.
This operation can be easily performed by means of the following procedure.
- Provide a fork carrier or a bucket and a load corresponding to at least half the lift truck's rated capacity.
- Preferably perform the reset when the lift truck is still cold (before it is used) or ensure that the temperature of the rear axle is not more than 50 °C.
- Place the lift truck on flat, level ground with the wheels straight.

Scrupulously follow the jib positioning instructions. Should you fail to follow these instructions, two audible beeps will be sounded and the fault indicator lamp will come on. If in doubt, consult your dealer.

STAGE 1 START

- Without attachments.
- Jib fully retracted and raised.

Simultaneously press and hold down the "BUCKET" MODE and TEST buttons.

- Two audible beeps will be sounded and all the leds will flash twice to confirm the start of the procedure.

STAGE 2

- An audible beep.
- First green led flashing.
- Flashing test button.

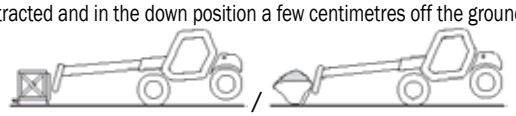
- Without attachments.
- Carriage tilted fully backward.
- Jib fully retracted and in the down position a few centimetres off the ground.

Short press the test button.

STAGE 3

- First green led continuously lit.
- Second green led flashing.
- - Flashing test button.

- With the fork carrier or the bucket and a load (keep jib retracted to allow all other hydraulic movements).
- Jib fully retracted and in the down position a few centimetres off the ground.



Keep the load as close to the ground as possible throughout this operation.

- Hold down the disable the "aggravating" hydraulic movement cut-off button, and telescope the jib until the rear wheels are off the ground.

NOTA: This stage consists in unloading the rear axle. It can be done using a jack but without bearing on the rear axle.

Short press the test button.

- Two audible beeps will be sounded and all the leds will flash twice to confirm the end of the procedure.

STAGE 4 FINISH

- All leds lit.
- A continuous audible beep.

- After completing the resetting procedure, the lift truck is in an overloaded condition. Retract the telescope to restore the situation.

When the reset is completed, check the operation of the longitudinal stability limiter and warning device (see: 3 - MAINTENANCE: A - DAILY OF EVERY 10 HOURS SERVICE).

4 - ELECTRIC AND HYDRAULIC SYSTEMS

ELECTRIC SYSTEM

STARTER MOTOR

The starter motor is fitted to the left of the engine and it needs no maintenance apart from cleaning and tightening of the terminals. Contact your agent or dealer if the starter motor does not work correctly.

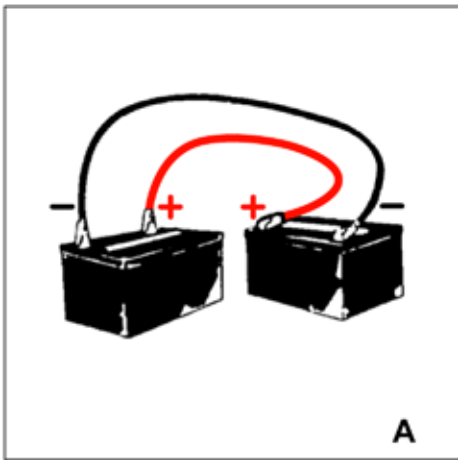
ALTERNATOR

The alternator is mounted on the left of the engine. The alternator and the regulator are designed to function in a system polarized in one direction only, it is therefore necessary to take the following precautions while working on the battery charge circuit as it can otherwise cause serious damage to the electrical equipment:

Do not activate the alternator with the circuit open, but make sure all the terminals are tightened.
Do not dismantle the terminals on the back of the alternator with the combustion engine running, as it can otherwise damage the alternator.
When installing a battery, make sure the connections are polarized correctly. The wire marked (+) must be connected to the positive terminal (+) of the battery and the wire marked (-) must be connected to the negative terminal (-) of the battery, and it must be earthed.

If a second battery is used to start up the combustion engine, always connect terminals having the same polarity (Fig. A). Mount a battery having the same voltage as that on the truck.
If an outside charger is used, always connect the (+) wire of the charger to the (+) terminal of the battery and the (-) wire of the charger to the (-) terminal of the battery and earthing.
Never short circuit the alternator terminals or earth them.

Never invert the alternator connections on the battery.
Never dismantle or change an electric connection with the engine running.
In case of electric welding on the truck, connect the negative cable of the welder directly to the part to be welded to prevent high voltage current from passing through the alternator and then disconnect the battery.



A

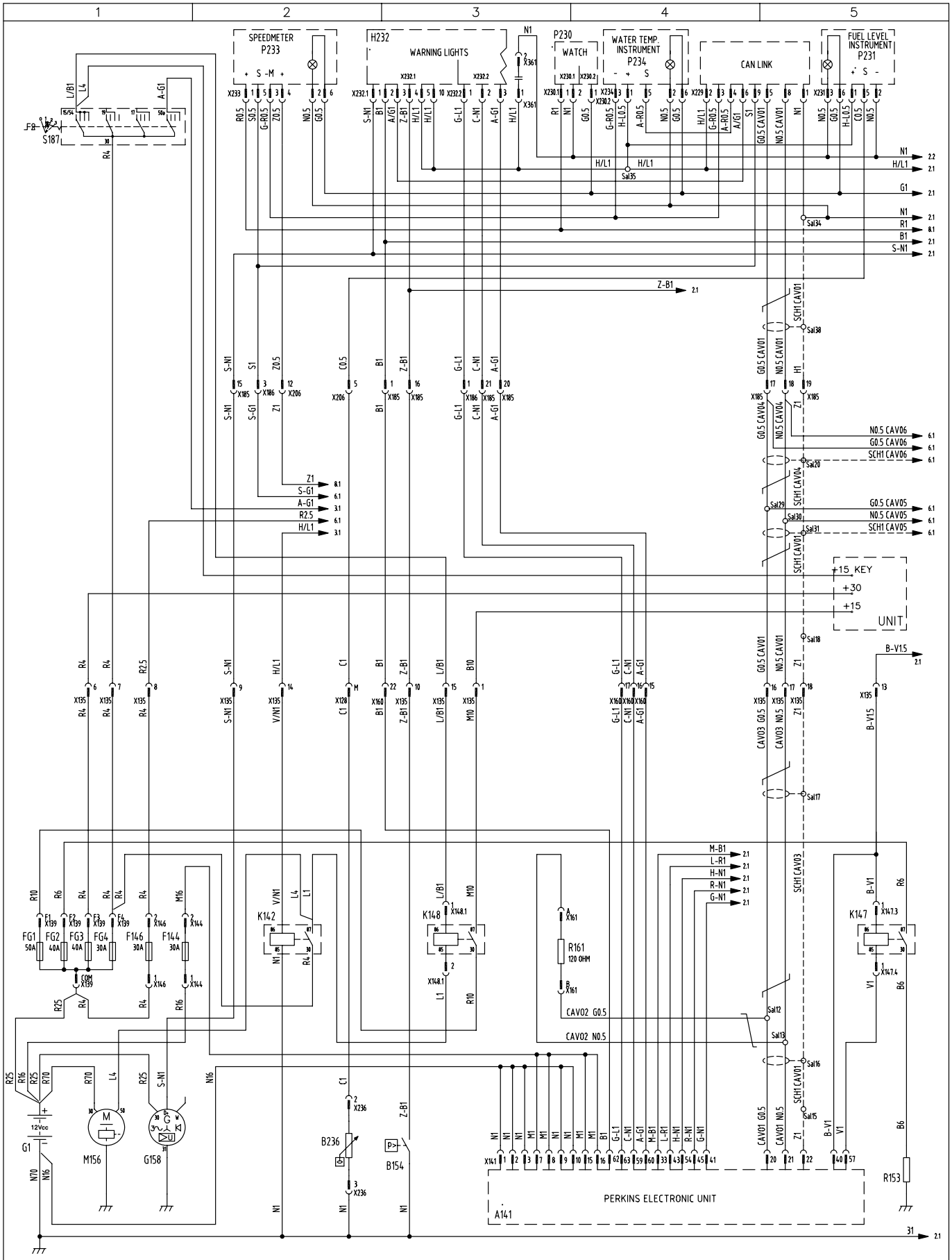
LIGHTING

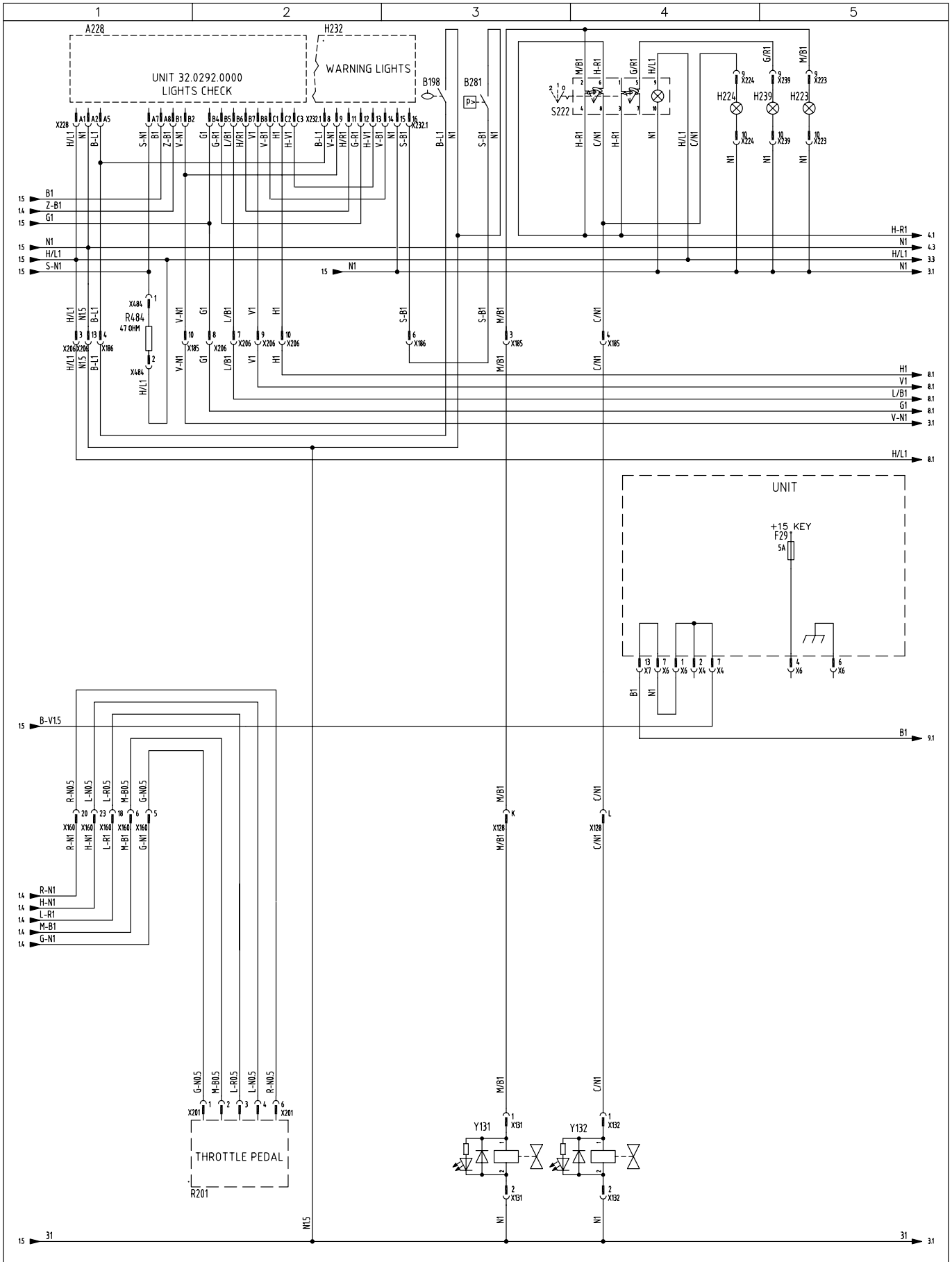
A fused bulb must be replaced immediately.
Never handle a new bulb with bare or dirty hands, since traces of grease, oil or sweat will evaporate when the bulb is heated and thus stain the reflector.
Never touch or try to polish the reflector. Open the headlight only to change the bulb.

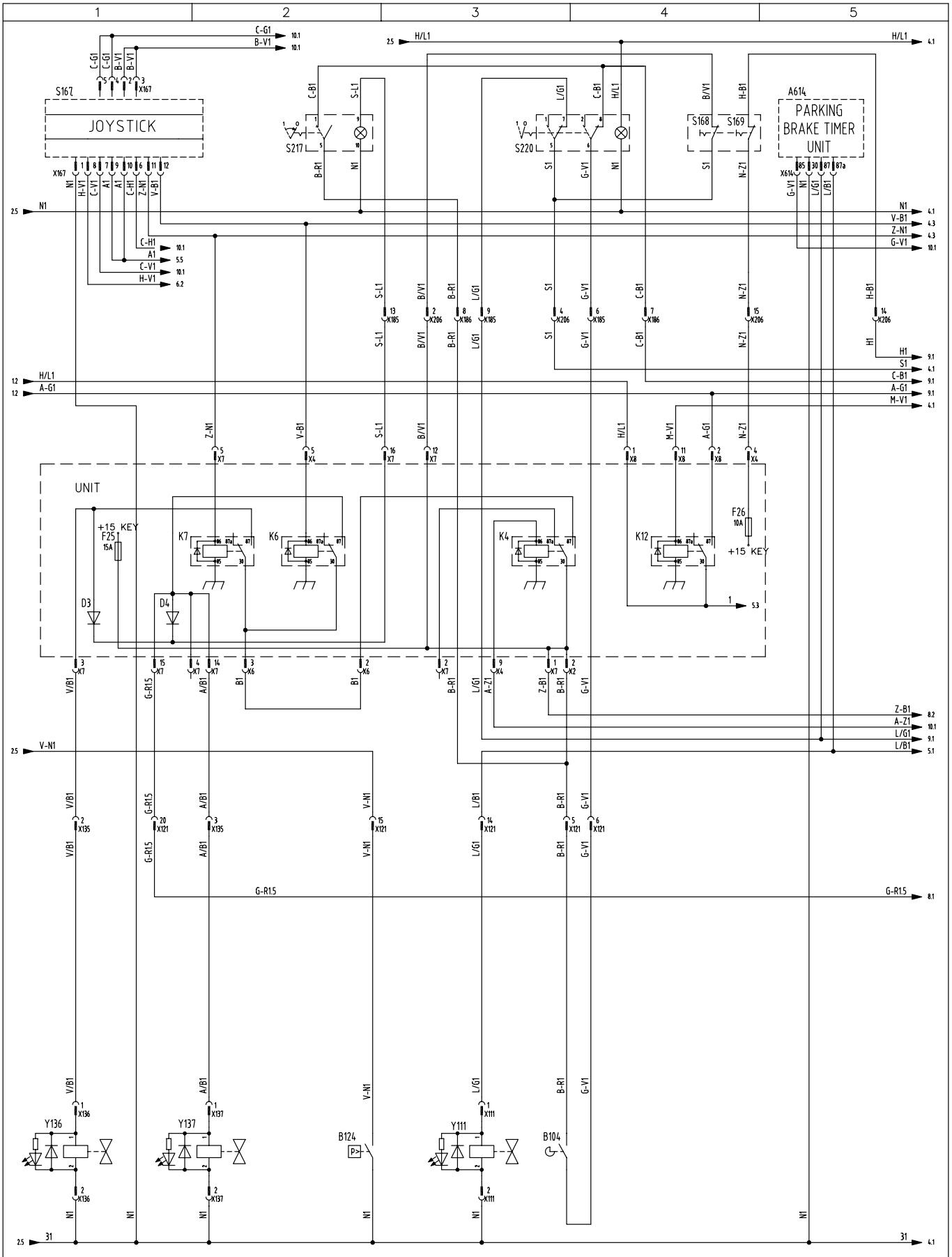
BATTERY

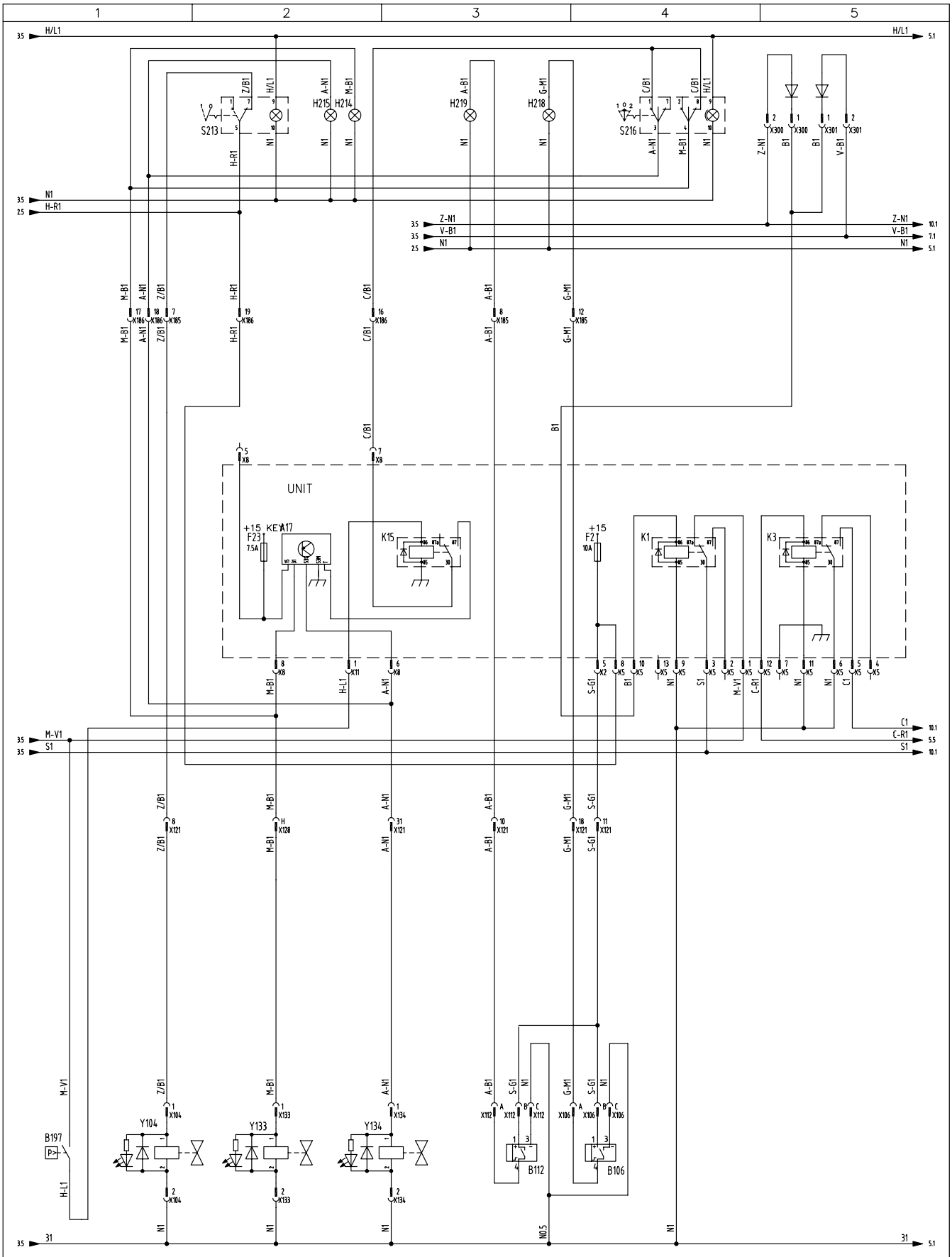
The battery efficiency is proportional to the reduction in temperature and finally ceases at -40°C.
Never try to use the starter motor if the battery is exposed to a temperature around -29°C.
In such cases, heat the battery by immersing it in warm water, to a level of 5 cm below the covers.
In case of very low temperatures, remove the battery from the truck and store it in a warm place until it is used.

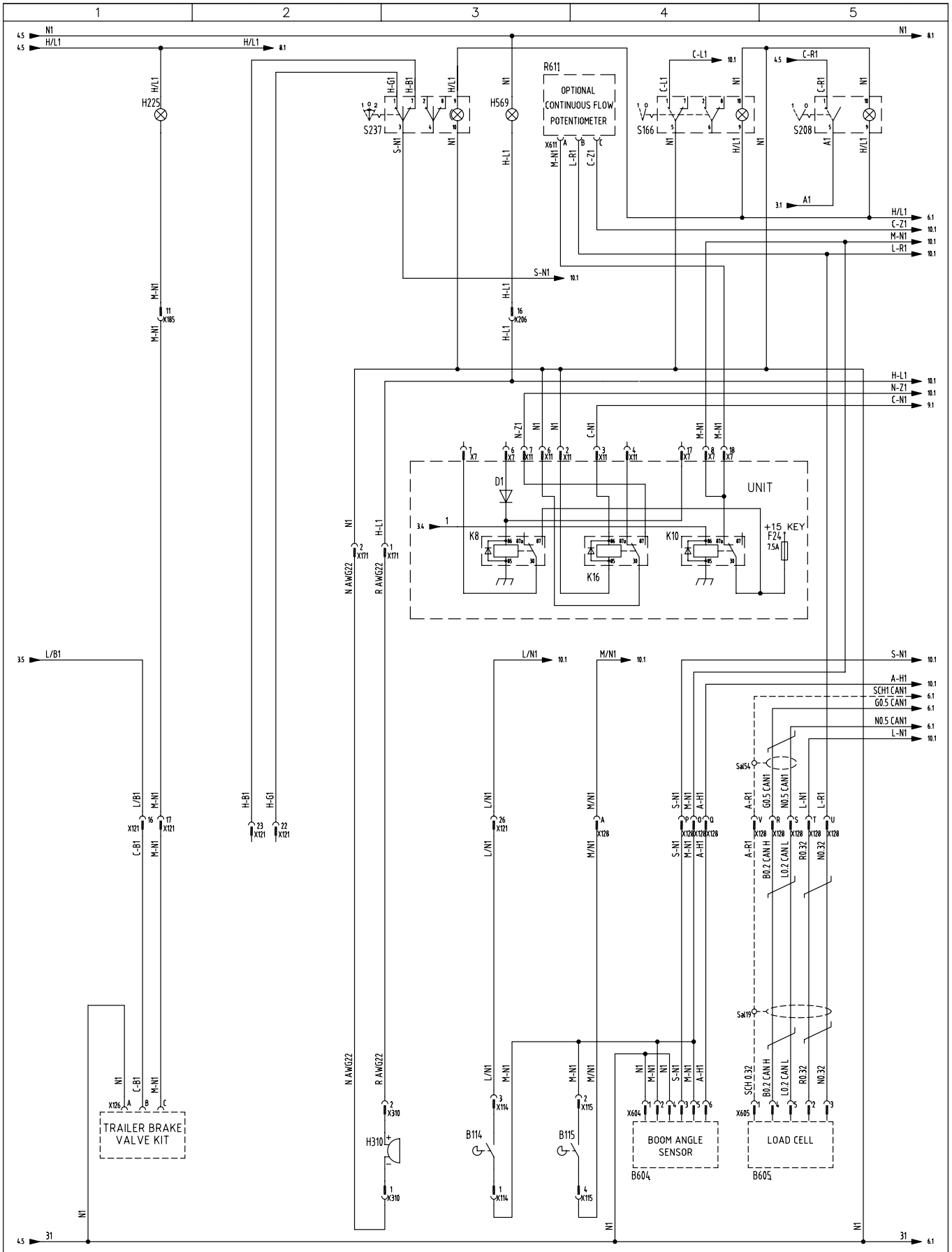
ELECTRIC SYSTEMS MHT 780 T

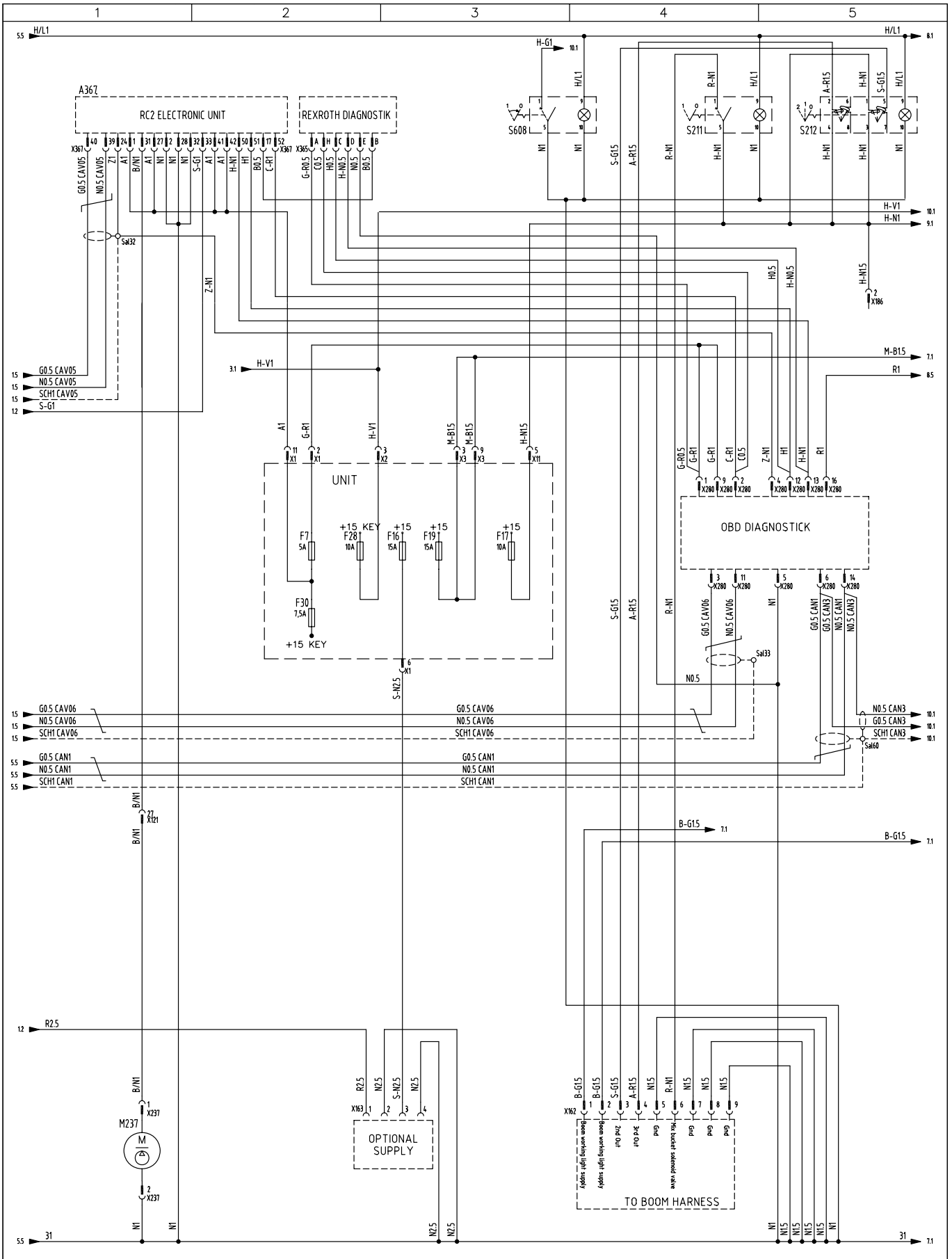

1
2
3
4
5
SPEEDMETER
P233
H232
WARNING LIGHTS
N1
P230
WATCH
WATER TEMP.
INSTRUMENT
P234
CAN LINK
FUEL LEVEL
INSTRUMENT
P231
S187
F8
L/B1
A-G1
R4
Sal35
Sal34
Sal38
Sal18
Sal17
Sal20
Sal29
Sal30
Sal31
Sal12
Sal13
Sal16
Sal15
SCH1 CAV01
SCH1 CAV04
SCH1 CAV06
SCH1 CAV05
SCH1 CAV03
+15 KEY
+30
+15
UNIT
B-V15
FG1 50A
FG2 40A
FG3 40A
FG4 30A
F146 30A
F144 30A
K142
K148
K147
R161 120 OHM
CAV02 G0.5
CAV02 N0.5
M156
G158
G1
12Vcc
B236
B154
PERKINS ELECTRONIC UNIT
A141
R153
MHT 780 HT
MANITOU
PAGE 1
OF 13

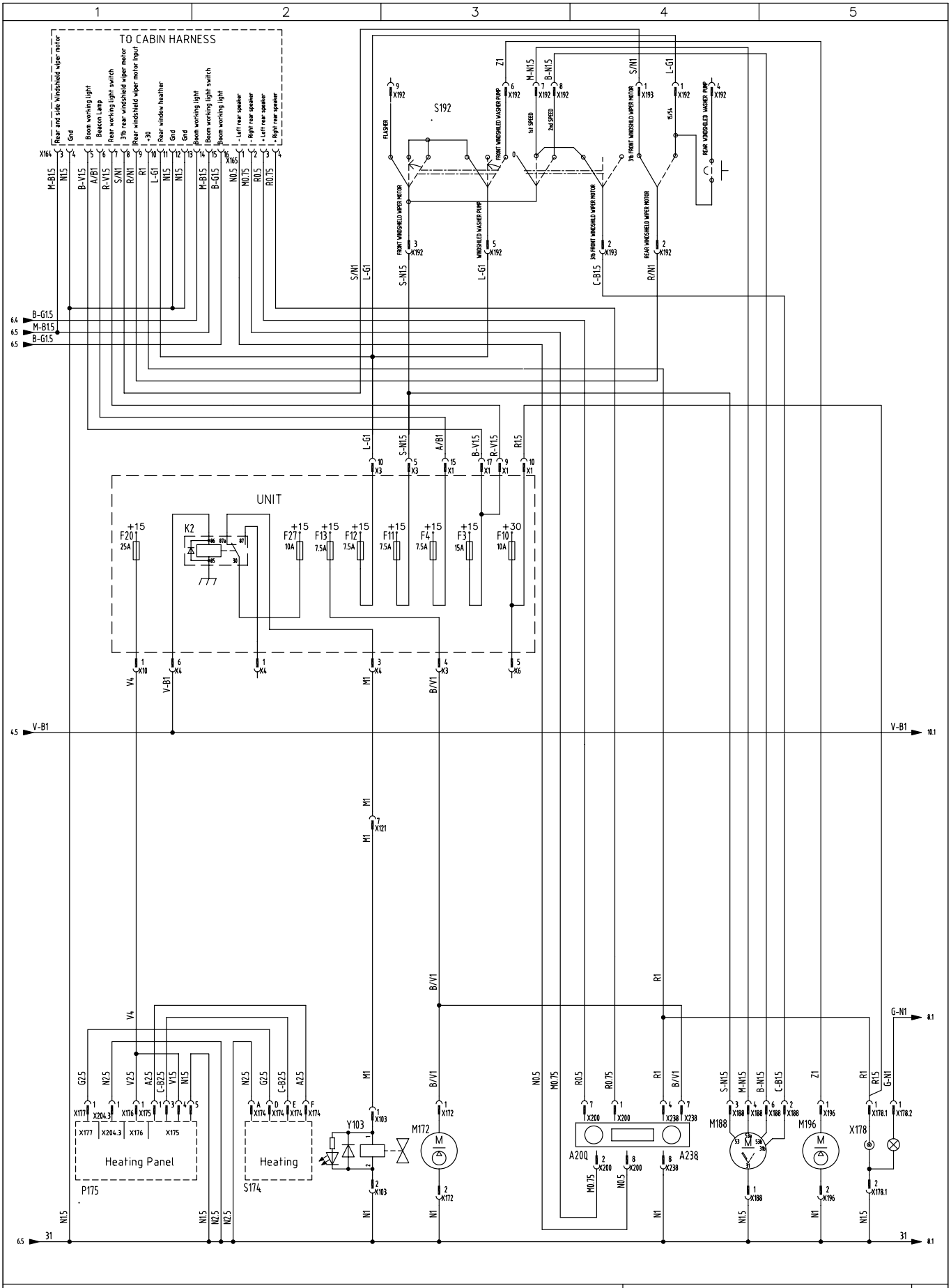

1
2
3
4
5
A228
UNIT 32.0292.0000
LIGHTS CHECK
H232
WARNING LIGHTS
B198
B281
S222
H224
H239
H223
R484
47 OHM
UNIT
+15 KEY
F29
5A
THROTTLE PEDAL
R201
Y131
Y132
B-V1.5
B1
H-R1
N1
H/L1
S-N1
H1
V1
L/B1
G1
V-N1
R-N1
H-N1
L-R1
M-B1
G-N1
N15
31

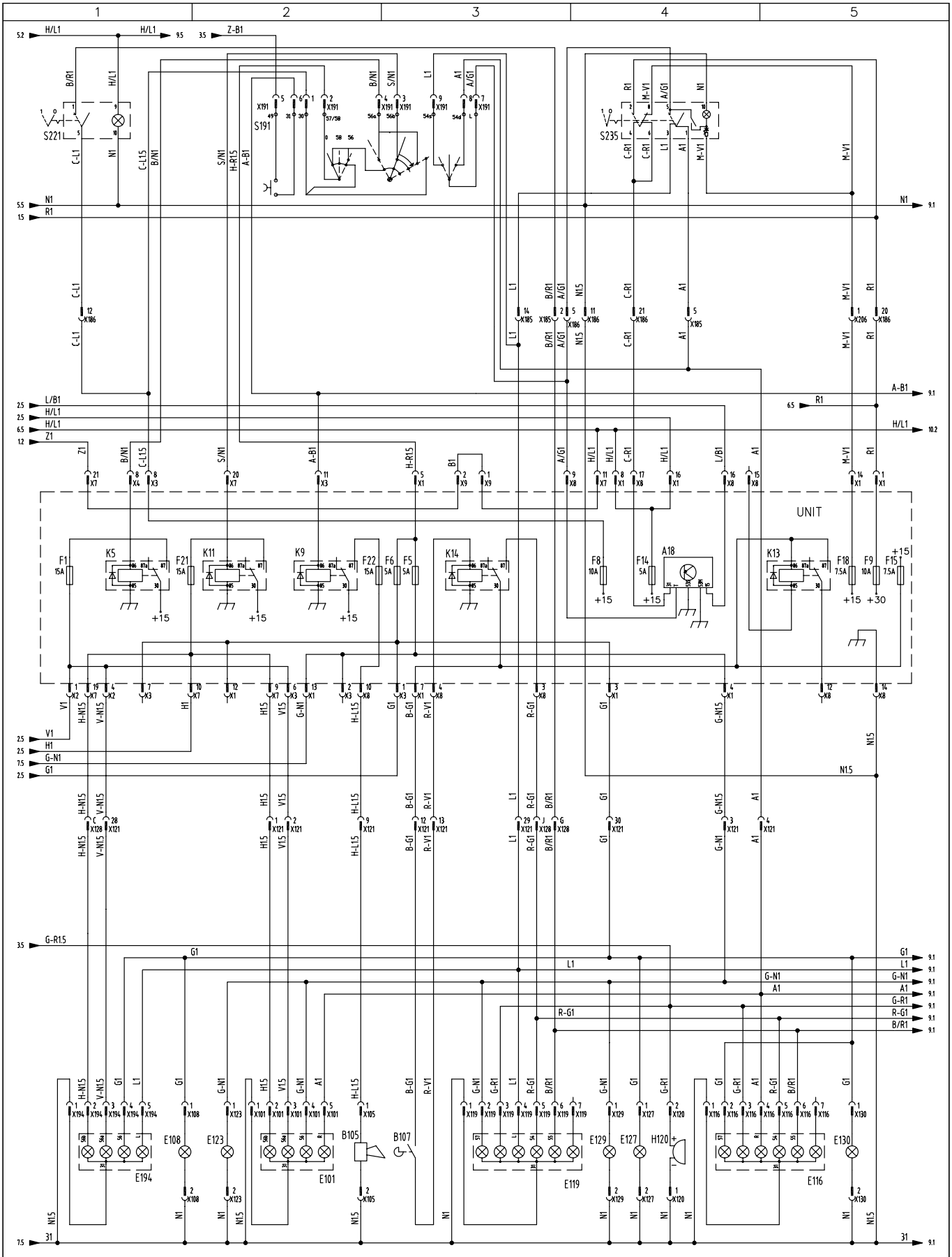

1
2
3
4
5
JOYSTICK
S167
S217
S220
S168
S169
PARKING BRAKE TIMER UNIT
A614
UNIT
+15 KEY
F25
15A
F26
10A
K7
K6
K4
K12
D3
D4
Y136
Y137
Y111
B124
B104
H/L1
N1
V-B1
Z-N1
G-V1
C-H1
A1
C-V1
H-V1
S-L1
B/V1
B-R1
L/G1
S1
C-B1
N-Z1
H-B1
H1
A-G1
M-V1
Z-B1
A-Z1
L/B1
V-N1
V/B1
G-R1.5
A/B1
B1
B-R1
G-V1
31

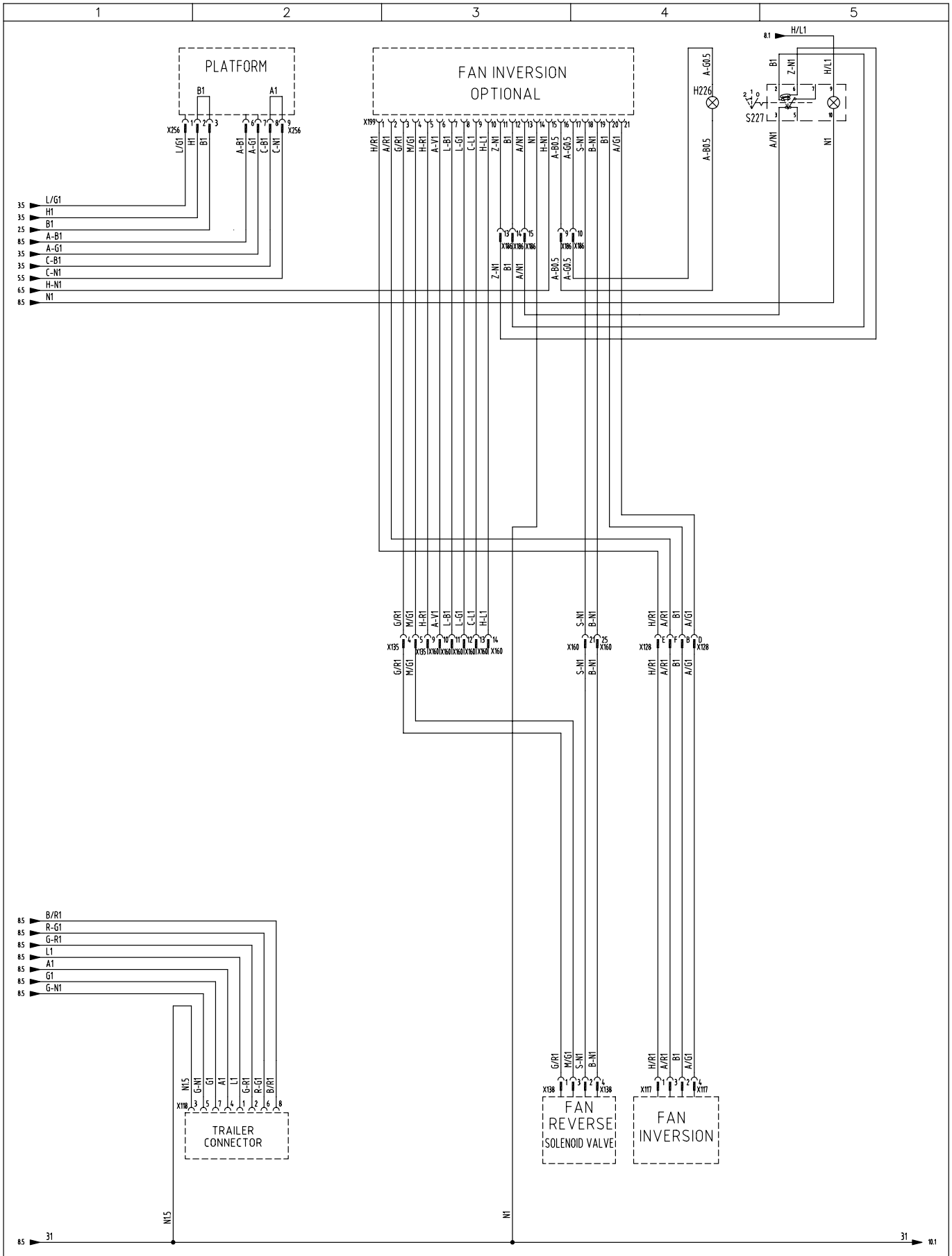

1
2
3
4
5
H/L1
N1
H-R1
Z-N1
V-B1
M-V1
S1
C1
C-R1
31
UNIT
+15 KEY
F23
7.5A
F2
10A
K15
K1
K3
S213
S216
H215
H214
H219
H218
X300
X301
Y104
Y133
Y134
B197
B112
B106

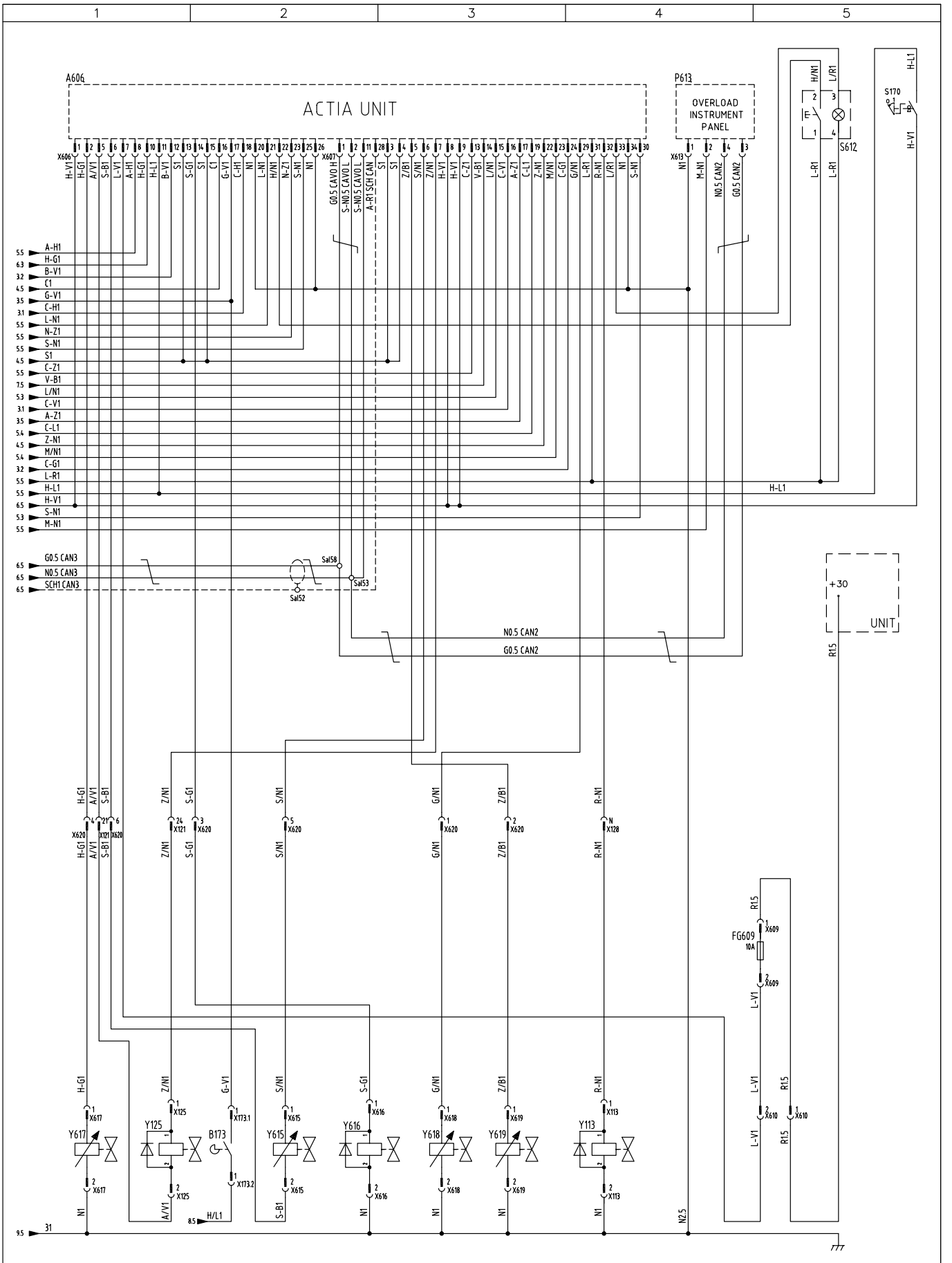

1
2
3
4
5
H225
S237
H569
R611
OPTIONAL
CONTINUOUS FLOW
POTENTIOMETER
S166
S208
UNIT
D1
K8
K10
K16
+15 KEY
F24
7.5A
H310
B114
B115
TRAILER BRAKE
VALVE KIT
BOOM ANGLE
SENSOR
B604
LOAD CELL
B605


A367
RC2 ELECTRONIC UNIT
REXROTH DIAGNOSTIK
S608
S211
S212
UNIT
F7 5A
F28 10A
F16 15A
F19 15A
F17 10A
F30 7,5A
+15 KEY
OBD DIAGNOSTICK
M237
OPTIONAL SUPPLY
TO BOOM HARNESS
Boom working light supply
2nd out
3rd out
Gnd
Max bucket solenoid valve


TO CABIN HARNESS
Rear and side windshield wiper motor
Gnd
Boom working light
Beacon Lamp
Rear working light switch
3th rear windshield wiper motor
Rear windshield wiper motor input
+30
Rear window heather
Gnd
Gnd
Boom working light
Boom working light switch
Boom working light
- Left rear speaker
- Right rear speaker
+ Left rear speaker
+ Right rear speaker
S192
FLASHER
FRONT WINDSHIELD WIPER MOTOR
FRONT WINDSHIELD WASHER PUMP
1st SPEED
2nd SPEED
3th FRONT WINDSHIELD WIPER MOTOR
REAR WINDSHIELD WIPER MOTOR
REAR WINDSHIELD WASHER PUMP
UNIT
K2
F20 25A
F27 10A
F13 7.5A
F12 7.5A
F11 7.5A
F4 7.5A
F3 15A
F10 10A
Heating Panel
P175
Heating
S174
Y103
M172
A200
A238
M188
M196
X178


1
2
3
4
5
S221
S191
S235
UNIT
K5
K11
K9
K14
K13
A18
F1
F21
F22
F6
F5
F8
F14
F18
F9
F15
+15
+30
E194
E108
E123
E101
B105
B107
E119
E129
E127
H120
E116
E130
MANITOU


1
2
3
4
5
PLATFORM
B1
A1
X256
L/G1
H1
B1
A-B1
A-G1
C-B1
C-N1
X256
FAN INVERSION
OPTIONAL
X199
H/R1
A/R1
G/R1
M/G1
H-R1
A-V1
L-B1
L-G1
C-L1
H-L1
Z-N1
B1
A/N1
N1
H-N1
A-B0.5
A-G0.5
S-N1
B-N1
B1
A/G1
A-G0.5
H226
A-B0.5
8.1
H/L1
B1
Z-N1
H/L1
S227
A/N1
N1
L/G1
H1
B1
A-B1
A-G1
C-B1
C-N1
H-N1
N1
3.5
3.5
2.5
8.5
3.5
3.5
5.5
6.5
8.5
X186
X135
X160
X128
X138
X117
B/R1
R-G1
G-R1
L1
A1
G1
G-N1
N1.5
TRAILER
CONNECTOR
FAN
REVERSE
SOLENOID VALVE
FAN
INVERSION
31
10.1


A606
ACTIA UNIT
P613
OVERLOAD
INSTRUMENT
PANEL
S612
S170
X606
X607
X613
H-V1
H-G1
A/V1
S-B1
L-V1
A-H1
H-G1
H-L1
B-V1
S1
S-G1
S1
C1
G-V1
C-H1
N1
L-N1
H/N1
N-Z1
S-N1
N1
G0.5 CAVO H
S-N0.5 CAVO L
S-N0.5 CAVO L
A-R1 SCH CAN
S1
Z/B1
S/N1
Z/N1
H-V1
H-V1
C-Z1
V-B1
L/N1
C-V1
A-Z1
C-L1
Z-N1
M/N1
C-G1
G/N1
L-R1
R-N1
L/R1
N1
S-N1
N1
M-N1
N0.5 CAN2
G0.5 CAN2
H/N1
L/R1
L-R1
L-R1
H-L1
H-V1
H-L1
A-H1
H-G1
B-V1
C1
G-V1
C-H1
L-N1
N-Z1
S-N1
S1
C-Z1
V-B1
L/N1
C-V1
A-Z1
C-L1
Z-N1
M/N1
C-G1
L-R1
H-L1
H-V1
S-N1
M-N1
G0.5 CAN3
N0.5 CAN3
SCH1 CAN3
Sal58
Sal53
Sal52
N0.5 CAN2
G0.5 CAN2
+30
UNIT
R15
FG609
10A
X609
L-V1
R15
X610
Y617
Y125
B173
Y615
Y616
Y618
Y619
Y113
X617
X125
X173.1
X173.2
X615
X616
X618
X619
X113
H/L1
N2.5
31

1	2	3	4	5

Nome/Item	Descrizione/Description	Fg/Sh
A17	Centralina cambio cilindrata	4.2
A18	CENTRALINA FLASHER	8.4
A141	CENTRALINA PERKINS	1.3
A200	AUTORADIO	7.4
A228	CENTRALINA CHECK SPIE	2.1
A238	AUTORADIO	7.4
A367	CENTRALINA RC2	6.1
A606	CENTRALINA ACTIA	10.1
A614	TEMPORIZZATORE EV PARKING BRAKE	3.5
B104	MICRO MARCIA INSERITA	3.3
B105	AVVISATORE ACUSTICO	8.2
B106	SENSORE ALLINEAMENTO ASSALE POSTERIORE	4.4
B107	MICRO STOP	8.3
B112	SENSORE ALLINEAMENTO ASSALE ANTERIORE	4.3
B114	MICRO BRACCIO RIENTRATO 1	5.3
B115	MICRO BRACCIO RIENTRATO 2	5.4
B124	PRESSOSTATO PARKING BRAKE	3.2
B154	PRESSOSTATO FILTRO ARIA INTASATO	1.3
B173	MICRO SEDILE	10.2
B197	PRESSOSTATO PEDALE STOP	4.1
B198	SENSORE LIVELLO OLIO FRENI	2.3
B236	INDICATORE LIVELLO CARBURANTE	1.2
B281	PRESSOSTATO BASSA PRESSIONE COMP. STERZATURA	2.3
B604	SENSORE ANGOLO BRACCIO	5.4
B605	CELLA DI CARICO	5.5
E101	FANALE ANTERIORE DX	8.2
E108	LUCE DI INGOMBRO ANTERIORE SX	8.1
E116	FANALE POSTERIORE DX	8.5
E119	FANALE POSTERIORE SX	8.3
E123	LUCE DI INGOMBRO ANTERIORE DX	8.2
E127	LUCE TARGA	8.4
E129	LUCE DI INGOMBRO POSTERIORE SX	8.4
E130	LUCE DI INGOMBRO POSTERIORE DX	8.5
E194	FANALE ANTERIORE SX	8.1
F1	FUSIBILE LUCI ABBAGLIANTI	8.1
F2	FUSIBILI ALIM. SENSORI ALLINEAMENTO ASSALI	4.4
F3	FUSIBILE FARI LAVORO	7.3
F4	FUSIBILE GIROFARO	7.3
F5	FUSIBILE LUCI DI POSIZIONE DX	8.3
F6	FUSIBILE LUCI DI POSIZIONE SX	8.3
F7	FUSIBILE +15 OBD	6.2
F8	FUSIBILE RETRONEBBIA E DEVIO LUCI	8.4
F9	FUSIBILE WARNING	8.5
F10	FUSIBILE PRESA ACCENDI-SIGARI E PLAFONIERA	7.3
F11	FUSIBILE TERGI ANTERIORE	7.3
F12	FUSIBILE DEVIO LUCI-TERGI E SBRINATORE	7.2
F13	FUSIBILE COMP. SEDILE E AUTORADIO	7.2
F14	FUSIBILE ALIM. STRUMENTI E CENTRALINA CAN	8.4
F15	FUSIBILE LUCI STOP	8.5
F16	FUSIBILE +15 OPZIONALE	6.3
F17	FUSIBILE ALIM. BENNA MIX E DOPPIA TRIPLA USCITA	6.3
F18	FUSIBILE WARNING	8.5
F19	FUSIBILE FARI LAVORO POSTERIORI E TETTO	6.3
F20	FUSIBILE ALIM. RISCALDAMENTO	7.1
F21	FUSIBILE LUCI ANABBAGLIANTI	8.1
F22	FUSIBILE CLAXON	8.2
F23	FUSIBILE 2a VELOCITA' IDROSTATICA + CENTR. CAMBIO MECCANICO	4.2
F24	FUSIBILE ALI. SENS. ACTIA. SENS. ANGIOLO BRACCIO, POT. OLIO IN CONTINUO E VISUAL. ARB	5.5
F25	FUSIBILE ACTIA TRASMISSIONE	3.1
F26	FUSIBILE ELETTROSTOP MOTORE	3.4
F27	FUSIBILE ELETTROVALVOLA DA2	7.2
F28	FUSIBILE ALIM. ACTIA	6.2
F29	FUSIBILE NON COLLEGATO	2.5
F30	FUSIBILE ALIM. RC2 REXROTH	6.2
F144	FUSIBILE POTENZA PERKINS	1.1
F146	FUSIBILE ALIMENTAZIONE OPTIONAL	1.1
FG1	FUSIBILE RELE' SERVIZI	1.1
FG2	FUSIBILE RELE' PRERISCALDO	1.1
FG3	FUSIBILE CENTRALINA ELETTROMECCANICA	1.1
FG4	FUSIBILE QUADRO AVVIAMENTO + RELE' AVVIAMENTO	1.1
FG609	FUSIBILE ACTIA	10.5
G1	BATTERIA	1.1
G158	ALTERNATORE	1.1
H120	BUZZER RETROMARCIA	8.4
H214	SPIA MARCIA LENTA	4.2
H215	SPIA MARCIA VELOCE	4.2
H218	ALLINEAMENTO ASSALE POSTERIORE	4.3
H219	ALLINEAMENTO ASSALE ANTERIORE	4.3
H223	SPIA STERZO TONDO	2.5
H224	SPIA STERZO GRANCHIO	2.4
H225	SPIA FRENO RIMORCHIO	5.1
H226	SPIA INV. VENTOLE	9.4
H232	SPIE DI SEGNALAZIONE	2.2
H232	SPIE DI SEGNALAZIONE	1.2
H239	SPIA STERZO STRADALE	2.5
H310	BUZZER ESCLUSIONE ARB	5.3
H569	SPIA BY PASS ARB	5.3
K1	RELE' NEUTRAL POSITION	4.4
K2	RELE' ELETTROVALVOLA DA2	7.2
K3	RELE' MESSA A SCARICO	4.5
K4	RELE' STACCO TRASMISSIONE	3.3
K5	RELE' LUCI ABBAGLIANTI	8.1
K6	RELE' MARCIA INDIETRO	3.2
K7	RELE' MARCIA AVANTI	3.2
K8	RELE' LIBERO	5.3
K9	RELE' AVVISATORE ACUSTICO	8.2
K10	RELE' ALIM. SENSORI ACTIA	5.4
K11	RELE' LUCI ANABBAGLIANTI	8.2

Nome/Item	Descrizione/Description	Fg/Sh
A17	CHANGE POWER UNIT	4.2
A18	FLASHER UNIT	8.4
A141	PERKINS UNIT	1.3
A200	RADIO	7.4
A228	WARNING LIGHTS CHECK UNIT	2.1
A238	RADIO	7.4
A367	RC2 UNIT	6.1
A606	ACTIA UNIT	10.1
A614	PARKING BRAKE SOLENOID VALVE TIMER UNIT	3.5
B104	INSERTED GEAR SWITCH	3.3
B105	CLAXON	8.2
B106	REAR AXLE ALIGNMENT SENSOR	4.4
B107	STOP SWITCH	8.3
B112	FRONT AXLE ALIGNMENT SENSOR	4.3
B114	RETRACT ARM 1 SWITCH	5.3
B115	RETRACT ARM 2 SWITCH	5.4
B124	PARKING BRAKE PRESSURE SWITCH	3.2
B154	AIR FILTER PRESSURE SWITCH	1.3
B173	SEAT SWITCH	10.2
B197	STOP PEDAL PRESSURE SWITCH	4.1
B198	BRAKE OIL SENSOR	2.3
B236	FUEL LEVEL INDICATOR SENSOR	1.2
B281	STEERING COMPENSATOR PRESSURE SWITCH	2.3
B604	BOOM ANGLE SENSOR	5.4
B605	LOAD CELL	5.5
E101	RIGHT FRONT LIGHT	8.2
E108	LEFT FRONT OVERALL LIGHT	8.1
E116	RIGHT REAR LIGHT	8.5
E119	LEFT REAR LIGHT	8.3
E123	RIGHT FRONT OVERALL LIGHT	8.2
E127	NUMBER PLATE LIGHT	8.4
E129	LEFT REAR OVERALL LIGHT	8.4
E130	RIGHT REAR OVERALL LIGHT	8.5
E194	LEFT FRONT LIGHT	8.1
F1	MAIN BEAM FUSE	8.1
F2	AXLES ALIGNMENT SENSORS SUPPLY FUSE	4.4
F3	WORKING LIGHTS FUSE	7.3
F4	BEACON LAMP FUSE	7.3
F5	RIGHT TRAFFIC LIGHTS FUSE	8.3
F6	LEFT TRAFFIC LIGHTS FUSE	8.3
F7	+15 OBD FUSE	6.2
F8	STEERING COLUMN LIGHTS SWITCH AND FOG LIGHT FUSE	8.4
F9	WARNING FUSE	8.5
F10	CABIN LAMP AND CIGAR LIGHER FUSE	7.3
F11	FRONT WINDSHIELD MOTOR FUSE	7.3
F12	WINDSHIELD MOTOR AND LIGHTS STEERING SWITCH	7.2
F13	RADIO AND SEAT COMPRESSURE FUSE	7.2
F14	CAN UNIT AND INSTRUEMNTS SUPPLY FUSE	8.4
F15	STOP LIGHTS FUSE	8.5
F16	+15 OPTIONAL FUSE	6.3
F17	2ND AMD 3RD OUT AND MIX BUCKET SUPPLY FUSE	6.3
F18	WARNING FUSE	8.5
F19	ROOF AND REAR WORKING LIGHTS FUSE	6.3
F20	HEATHER FUSE	7.1
F21	LOW BEAM FUSEI	8.1
F22	HORN FUSE	8.2
F23	MECCANICUNGEAR UNIT+ IDROSTATIC 2ND SPEED FUSE	4.2
F24	OVERLOAD PANEL,CONTINOUS OPTIONAL FLOW POTENTIOMETER, BOOM ANGLE, ACTIA SENSOR, SUPPLY FUSE	5.5
F25	TRASMISSION ACTIA FUSE	3.1
F26	FUEL SHUT OFF FUSE	3.4
F27	DA2 SOLEOIND VALVE FUSE	7.2
F28	ACTIA SUPPLY FUSE	6.2
F29	NOT CONNECTED FUSE	2.5
F30	RC2 REXROTH SUPPLY FUSE	6.2
F144	PERKINS UNIT FUSE	1.1
F146	OPTIONAL SUPPLY FUSE	1.1
FG1	SERVICE RELAY FUSE	1.1
FG2	PREHEATING RELAY FUSE	1.1
FG3	ELECTROMECANIC UNIT FUSE	1.1
FG4	START FUSE	1.1
FG609	ACTIA FUSE	10.5
G1	BATTERY	1.1
G158	GENERATOR	1.1
H120	REVERSE SPEED BUZZER	8.4
H214	LOW GEAR WARNING LIGHT	4.2
H215	FAST GEAR WARNING LIGHT	4.2
H218	REAR AXLE ALIGNMENT WARNING LIGHT	4.3
H219	FRONT ALIGNMENT WARNING LIGHT	4.3
H223	ROUND STEERING WARNING LIGHT	2.5
H224	CRAB STEERING WARNING LIGHT	2.4
H225	TRAILER BRAKE WARNING LIGHT	5.1
H226	FAN INVERSION WARNING LIGHT	9.4
H232	WARNING LIGHTS	2.2
H232	WARNING LIGHTS	1.2
H239	STREET STEERING WARNING LIGHT	2.5
H310	OVERLOAD DISABLED BUZZER	5.3
H569	OVERLOAD SYSTEM DISABLED WARNING LIGHT	5.3
K1	NEUTRAL POSITION RELAY	4.4
K2	DA2 SOLENOID VALVE RELAY	7.2
K3	BUCKET FUNCTION RELAY	4.5
K4	DECLUTCH RELAY	3.3
K5	MAIN BEAM RELAY	8.1
K6	REVERSE SPEED RELAY	3.2
K7	FORWARD SPEED RELAY	3.2
K8	FREE RELAY	5.3
K9	HORN RELAY	8.2
K10	ACTIA SENSOR SUPPLY RELAY	5.4
K11	LOW BEAM RELAY	8.2

1	2	3	4	5

Nome/Item	Descrizione/Description	Fg/Sh
K12	RELE' CONSENSO AVVIAMENTO	3.4
K13	RELE' NON COLLEGATO	8.5
K14	RELE' LUCI STOP	8.3
K15	RELE' CONSENSO CAMBIO VELOCITA' MECCANICO	4.3
K16	RELE' SEGNALE STACCO TRASMISSIONE NEGATIVO ACTIA	5.4
K142	RELE' AVVIAMENTO	1.2
K147	RELE' PRERISCALDO	1.5
K148	RELE' SERVIZI	1.3
M156	MOTORINO AVVIAMENTO	1.1
M172	COMPRESSORE SEDILE	7.3
M188	TERGI ANTERIORE	7.4
M196	POMPETTA TERGI	7.5
M237	POMPA IDRAULICA	6.1
P175	PANNELLO RISCALDAMENTO	7.1
P230	OROLOGIO	1.3
P231	STRUMENTO LIVELLO CARBURANTE	1.5
P233	CONTAGIRI	1.2
P234	STRUMENTO TEMPERATURA ACQUA	1.4
P613	VISUALIZZATORE ARB	10.4
R153	CANDELETTE	1.5
R161	RESISTENZA CAN-BUS 120 OHM	1.3
R201	PEDALE ACCELERATORE	2.1
R484	RESISTENZA 47 OHM	2.1
R611	POTENZIOMETRO OLIO IN CONTINUA	5.3
S166	INTERRUTTORE ESCLUSIONE OPZIONALI	5.4
S167	JOYSTICK	3.1
S168	FUNGO EMERGENZA CONTATTI STACCO TRASMISSIONE	3.4
S169	FUNGO EMERGENZA CONTATTI ARRESTO MOTORE	3.4
S170	CHIAVE FORZATURA ARB	10.5
S174	GRUPPO RISCALDAMENTO	7.2
S187	QUADRO AVVIAMENTO	1.1
S191	DEVIO LUCI FRECCE	8.3
S192	DEVIO TERGI	7.3
S208	INTERRUTTORE ABILITAZIONE BRACCIO	5.5
S211	INTERRUTTORE BENNA MIX	6.4
S212	INTERRUTTORE DOPPIA E TRIPLA USCITA	6.5
S213	INTERRUTTORE CAMBIO CILINDRATA	4.2
S216	INTERRUTTORE CAMBIO VELOCITA'	4.4
S217	INTERRUTTORE RESET CAMBIO	3.2
S220	INTERRUTTORE FRENO DI PARCHEGGIO	3.3
S221	INTERRUTTORE RETRONEBBIA	8.1
S222	INTERRUTTORE STERZATE	2.4
S227	INTERRUTTORE INVERSIONE VENTOLE	9.5
S235	INTERRUTTORE WARNING	8.4
S237	INTERRUTTORE LIVELLAMENTO	5.3
S608	PULSANTE MESSA A SCARICO	6.3
S612	PULSANTE+SPIA OLIO IN CONTINUA	10.5
Y103	ELETTROVALVOLA DA2	7.2
Y104	ELETTROVALVOLA DOPPIA CILINDRATA	4.1
Y111	ELETTROVALVOLA PARKING BRAKE	3.3
Y113	ELETTROVALVOLA VCI	10.4
Y125	ELETTROVALVOLA VS	10.1
Y131	ELETTROVALVOLA STERZATURA TONDO	2.3
Y132	ELETTROVALVOLA STERZATURA GRANCHIO	2.4
Y133	ELETTROVALVOLA 1a VELOCITA'	4.2
Y134	ELETTROVALVOLA 2a VELOCITA'	4.3
Y136	ELETTROVALVOLA MARCIA AVANTI	3.1
Y137	ELETTROVALVOLA MARCIA INDIETRO	3.2
Y615	ELETTROVALVOLA PROP. SLOW MOTION	10.2
Y616	ELETTROVALVOLA OPTIONAL 1	10.2
Y617	ELETTROVALVOLA PROP. OPTIONAL 2	10.1
Y618	ELETTROVALVOLA PROP. SFILO	10.3
Y619	ELETTROVALVOLA PROP. RIENTRO	10.3
X1	CONNETTORE CENTRALINA RELE' FUSIBILI	
X2	CONNETTORE CENTRALINA RELE' FUSIBILI	
X3	CONNETTORE CENTRALINA RELE' FUSIBILI	
X4	CONNETTORE CENTRALINA RELE' FUSIBILI	
X5	CONNETTORE CENTRALINA RELE' FUSIBILI	
X6	CONNETTORE CENTRALINA RELE' FUSIBILI	
X7	CONNETTORE CENTRALINA RELE' FUSIBILI	
X8	CONNETTORE CENTRALINA RELE' FUSIBILI	
X9	CONNETTORE CENTRALINA RELE' FUSIBILI	
X10	CONNETTORE CENTRALINA RELE' FUSIBILI	
X11	CONNETTORE CENTRALINA RELE' FUSIBILI	
X117	CONNETTORE INVERSIONE VENTOLA	9
X118	CONNETTORE PRESA RIMORCHIO	9
X121	CONNETTORE INTERFACCIA LINEA TELAIO-LINEA POSTO GUIDA	
X126	CONNETTORE KIT FRENO RIMORCHIO	5
X128	CONNETTORE INTERFACCIA LINEA TELAIO-LINEA POSTO GUIDA	
X135	CONNETTORE INTERFACCIA L.MOTORE-L.POSTO GUIDA	
X138	CONNETTORE ELETTROVALVOLE INVERSIONE VENTOLE	9
X160	CONNETTORE INTERFACCIA L.MOTORE-L.POSTO GUIDA	
X162	CONNETTORE A LINEA BRACCIO	6
X163	CONNETTORE ALIM. OPZIONALI.	6
X164	CONNETTORE A LINEA TETTO CABINA	7
X165	CONNETTORE A LINEA TETTO CABINA	7
X171	CONNETTORE PREDISP. ALLARME FORZATURA ANTIRIBALTAMENTO	5
X178	CONNETTORE PRESA ACCENDISIGARI	7
X185	CONNETTORE INTERFACCIA LINEA CRUSCOTTO-LINEA POSTO GUIDA	
X186	CONNETTORE INTERFACCIA LINEA CRUSCOTTO-LINEA POSTO GUIDA	
X199	CONNETTORE OPTIONAL INVERSIONE VENTOLE	9
X206	CONNETTORE INTERFACCIA L. POSTO GUIDA - L. CRUSCOTTO	
X229	CONNETTORE CAN LINK	1
X256	CONNETTORE INTERFACCIA LINEA CESTELLO	9
X280	CONNETTORE DIAGNOSTICA OBD	6
X365	CONNETTORE DIAGNOSTICA REXROTH	6
X610	CONNETTORE INTERFACCIA FUSIBILE CENTR. ACTIA	9
X620	CONNETTORE INTERFACCIA LINEA TELAIO-LINEA POSTO GUIDA	

Nome/Item	Descrizione/Description	Fg/Sh
K12	STARTER RELAY	3.4
K13	NOT CONNECTED RELAY	8.5
K14	STOP LIGHT RELAY	8.3
K15	SPEED CHANGE RELAY	4.3
K16	ACTIA TRASMISSION DECLUCH SIGNAL RELAY	5.4
K142	START RELAY	1.2
K147	PREHEATING RELAY	1.5
K148	SERVICE RELAY	1.3
M156	STARTER MOTOR	1.1
M172	SEAT COMPRESSOR	7.3
M188	FRONT WINDSHIELD WIPER MOTOR	7.4
M196	WINDSHILED WASHER PUMP	7.5
M237	IDRAULIC PUMP	6.1
P175	HEATING PANEL	7.1
P230	WATCH	1.3
P231	FUEL LEVEL INSTRUMENT PANEL	1.5
P233	SPEED SENSOR INSTRUMENTAL PANEL	1.2
P234	WATER INSTRUMENT PANEL	1.4
P613	OVERLOAD INSTRUMENT PANEL	10.4
R153	PREHEATING	1.5
R161	CAN-BUS RESISTOR 120OHM	1.3
R201	THROTTLE PEDAL	2.1
R484	RESISTOR 47 OHM	2.1
R611	OPTIONAL CONTINOUS FLOW POTENTIOMETER	5.3
S166	DISABLED OPTIONAL SWITCH	5.4
S167	JOYSTICK	3.1
S168	DECLUCH CONTACTS EMERGENCY SWITCH	3.4
S169	SOLENOID SHUT OFF CONTACTS EMERGENCY SWITCH	3.4
S170	OVERLOAD SYSTEM DISABLE KEY SWITCH	10.5
S174	HEATING GROUP	7.2
S187	STARTING SWITCH	1.1
S191	LIGHT STEERING COLUMN SWITCH	8.3
S192	WINDSHIELD MOTOR STEERING COLUMN SWITCH	7.3
S208	ENABLE BOOM SWITCH	5.5
S211	MIX BUCKET SWITCH	6.4
S212	DOBLE AND TRIPLE SWITCH	6.5
S213	CHANGE POWER SWITCH	4.2
S216	CHANGE SPEED SWITCH	4.4
S217	RESET GEAR SWITCH	3.2
S220	PARKING BRAKE SWITCH	3.3
S221	FOG BACK LIGHT SWITCH	8.1
S222	STEERING SWITCH	2.4
S227	FAN INVERSION SWITCH	9.5
S235	WARNING SWITCH	8.4
S237	LEVELLING SWITCH	5.3
S608	BOOM ENABLE SWITCH	6.3
S612	BUTTON+CONTINUE OIL WARNING LIGHT	10.5
Y103	DA2 SOLENOID VALVE	7.2
Y104	2° POWER SOLENOID VALVE	4.1
Y111	PARKING BRAKE SOLENOID VALVE	3.3
Y113	VCI SOLENOID VALVE	10.4
Y125	VS SOLENOID VALVE	10.1
Y131	ROUND STEERING SOLENOID VALVE	2.3
Y132	CRAB STEERING SOLENOID VALVE	2.4
Y133	FIRST GEAR SOLENOID VALVE	4.2
Y134	SECOND GEAR SOLENOID VALVE	4.3
Y136	FORWARD SOLENOID VALVE	3.1
Y137	REVERSE SPEED SOLENOID VALVE	3.2
Y615	SLOW MOTION PROP. SOLENOID VALVE	10.2
Y616	OPTIONAL 1 PROP. SOLENOID VALVE	10.2
Y617	OPTIONAL 2 PROP. SOLENOID VALVE	10.1
Y618	EXTEND PROP. SOLENOID VALVE	10.3
Y619	RETRACT PROP. SOLENOID VALVE	10.3
X1	FUSES-RELAYS UNIT CONNECTOR	
X2	FUSES-RELAYS UNIT CONNECTOR	
X3	FUSES-RELAYS UNIT CONNECTOR	
X4	FUSES-RELAYS UNIT CONNECTOR	
X5	FUSES-RELAYS UNIT CONNECTOR	
X6	FUSES-RELAYS UNIT CONNECTOR	
X7	FUSES-RELAYS UNIT CONNECTOR	
X8	FUSES-RELAYS UNIT CONNECTOR	
X9	FUSES-RELAYS UNIT CONNECTOR	
X10	FUSES-RELAYS UNIT CONNECTOR	
X11	FUSES-RELAYS UNIT CONNECTOR	
X117	FAN INVERSION CONNECTOR	9
X118	TRAILER CONNECTOR	9
X121	CHAISS HARNESS-DRIVE POSITION HARNESS INT. CONNECTOR	
X126	TRAILER BREAK KIT CONNECTOR	5
X128	CHAISS HARNESS-DRIVE POSITION HARNESS INT. CONNECTOR	
X135	ENGINE HARNESS-DRIVER POSITION HARNESS INT. CONNECTOR	
X138	FAN INVERSION SOLENOID VALVE CONNECTOR	9
X160	ENGINE HARNESS-DRIVER POSITION HARNESS INT. CONNECTOR	
X162	BOOM INTERFACE CONNECOTR	6
X163	OPTIONAL SUPPLY CONNECTOR	6
X164	CABIN CONNECTOR	7
X165	CABIN CONNECTOR	7
X171	OVERLOAD SYSTEM FORCING ALARM OPTIONAL CONNECTOR	5
X178	CIGAR LIGTHER CONNECTOR	7
X185	DASHBOARD HARNESS-DRIVER POSITION HARNESS INT. CONN.	
X186	DASHBOARD HARNESS-DRIVER POSITION HARNESS INT. CONN.	
X199	FAN INVERSION OPTIONAL CONNECTOR	9
X206	DASHBOARD HARNESS-DRIVER POSITION HARNESS INT. CONN.	
X229	CAN LINK CONNECTOR	1
X256	PLATFORM INTERFACE CONNECTOR	9
X280	OBD DIAGNOSTICK CONNECTOR	6
X365	REXROTH DIAGNOSTICK CONNECTOR	6
X610	ACTIA UNIT FUSE INTERFACE CONNECTOR	9
X620	CHAISS HARNESS-DRIVE POSITION HARNESS INT. CONNECTOR	

1	2	3	4	5

COLORI FILI	
A	AZZURRO
B	BIANCO
C	ARANCIONE
G	GIALLO
H	GRIGIO
L	BLU
M	MARRONE
N	NERO
R	ROSSO
S	ROSA
V	VERDE
Z	VIOLA

NOTA: LA COLORAZIONE DEI FILI BICOLORE VIENE INDICATA CON LA COMPOSIZIONE DELLE SIGLE SOPRA INDICATE , ESEMPIO:

G/V –>GIALLO/VERDE(COLORAZIONE TRASVERSALE)
G–V –>GIALLO–VERDE(COLORAZIONE LONGITUDINALE)

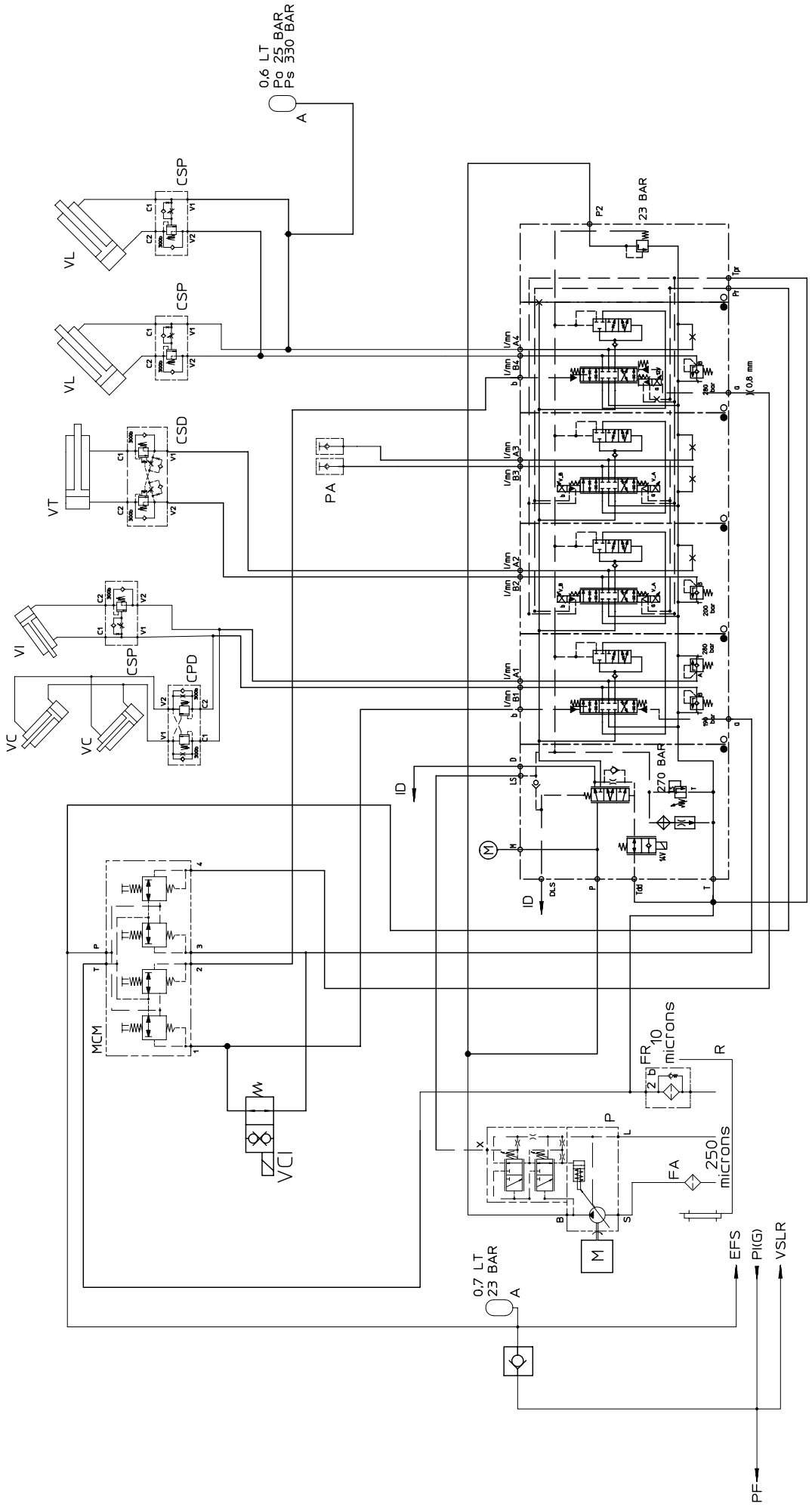
WIRING COLOURS	
A	LIGHTBLUE
B	WHITE
C	ORANGE
G	YELLOW
H	GREY
L	BLUE
M	BROWN
N	BLACK
R	RED
S	PINK
V	GREEN
Z	VIOLET

EXAMPLE:

G/V –>YELLOW/GREEN(TRANSVERSE COLOURS)
G–V –>YELLOW–GREEN(LONGITUDINAL COLOURS)

HYDRAULIC SYSTEMS MHT 780 T

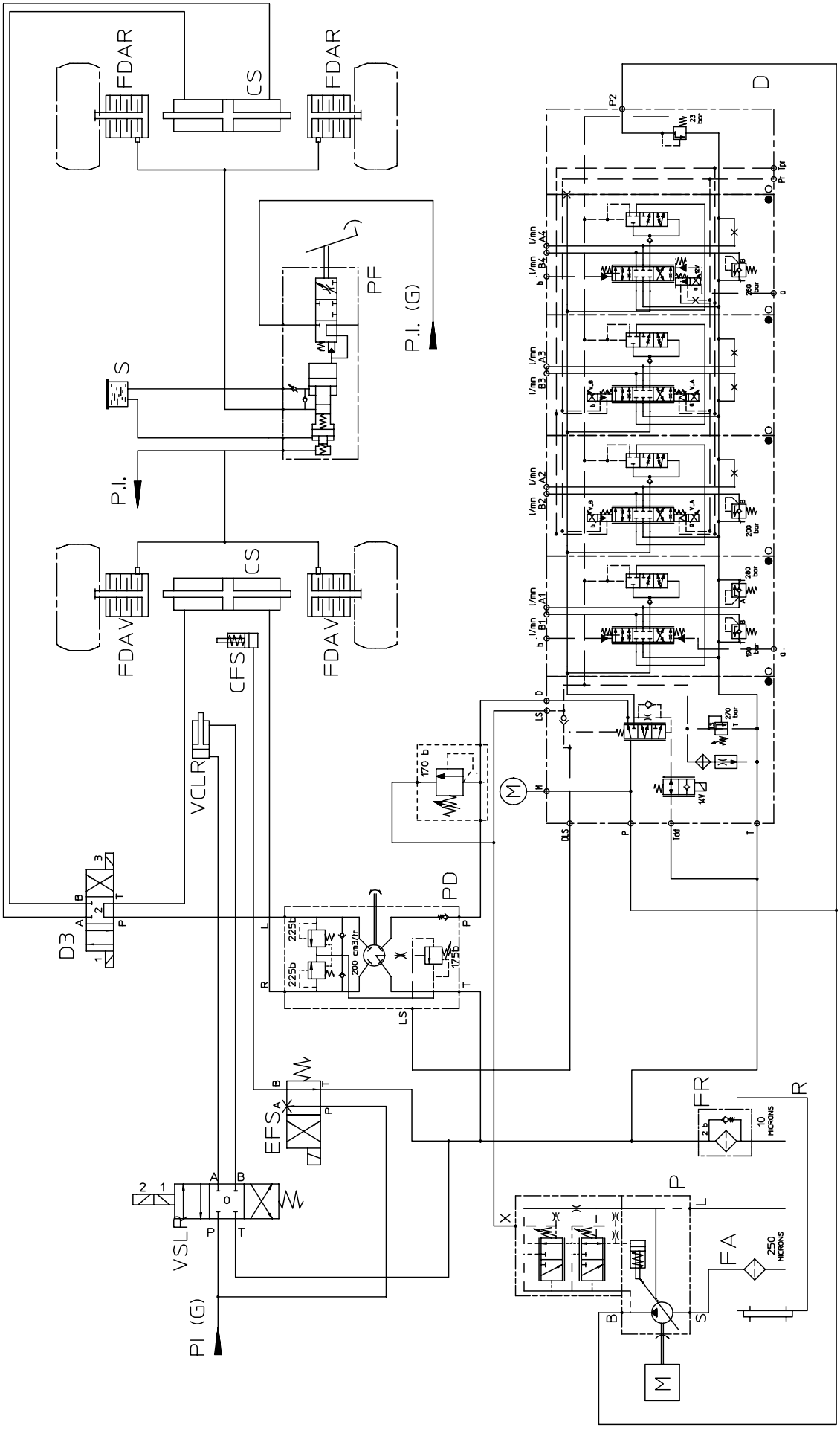
MOVEMENTS HYDRAULIC SYSTEM LAYOUT



LEGEND OF MOVEMENTS HYDRAULIC SYSTEM LAYOUT

A	=	Accumulator
CPD	=	Relief and balancing valve
CSD	=	Double relief valve
CSD	=	Piloted relief valve
D	=	Distributor
EEM	=	Manipulator exclusion solenoid valve
EFS	=	Parking brake solenoid valve
EVS	=	Anti-tilting solenoid valve
F.A.	=	Intake filter
F.R.	=	Exhaust filter
MCM	=	Manipulator
P.	=	Gear pump
P.A.	=	Optional socket
P.F.	=	Brake pump
PI (G)	=	G connection of hydrostatic pump
R	=	Oil tank
VL	=	Lift cylinder
VI	=	Inclination cylinder
VC	=	Compensation cylinder
VSLR	=	Slow-fast selector valve
VT	=	Extension cylinder

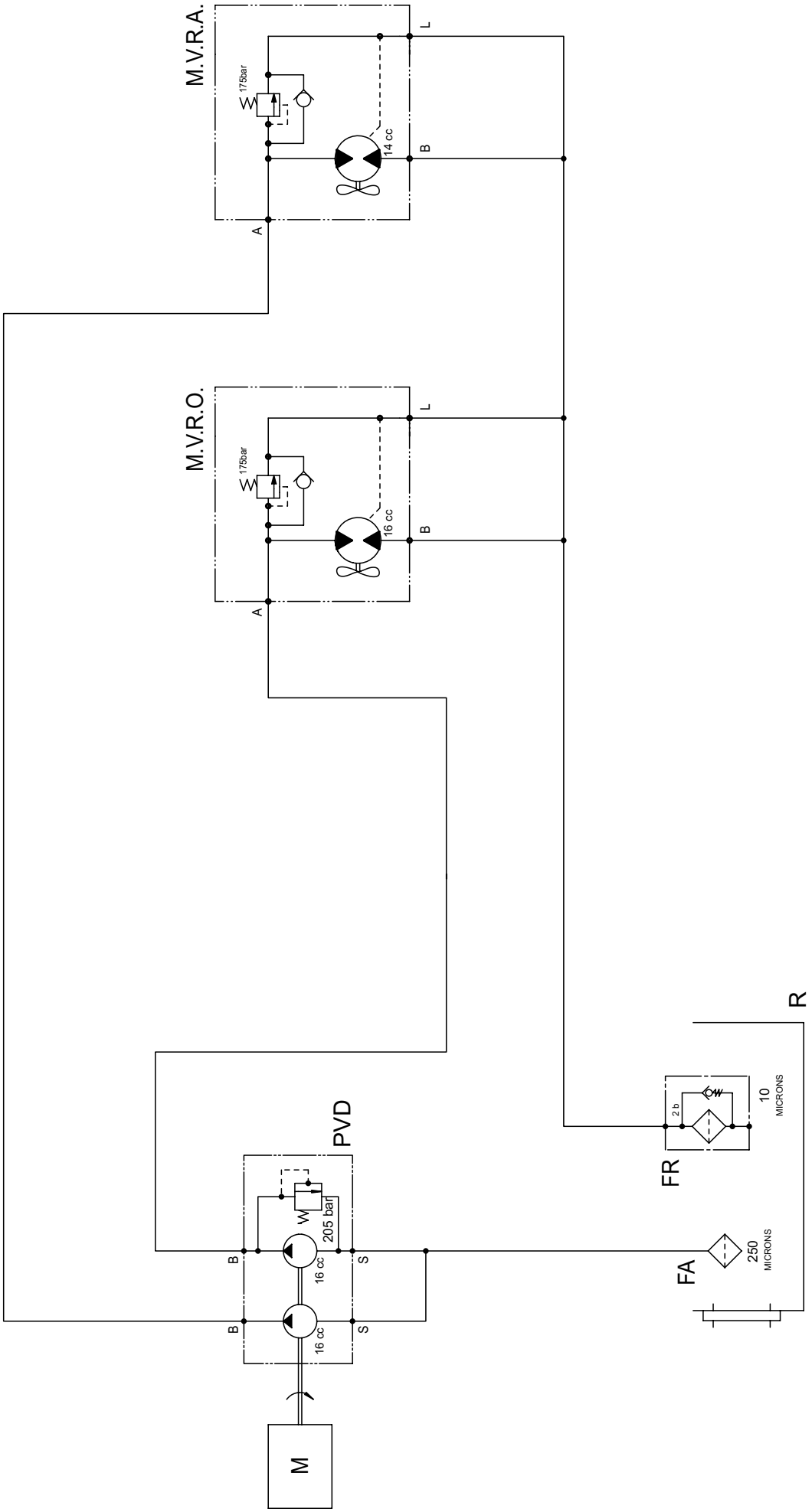
STEERING AND BRAKES HYDRAULIC SYSTEM LAYOUT



LEGEND - STEERING AND BRAKES HYDRAULIC SYSTEM LAYOUT

C.F.S.	=	Parking brake cylinder
C.S.	=	Steering cylinder
D	=	Distributor
D.3.	=	Steering distributor
EFS	=	Parking brake solenoid valve
F.A.	=	Intake filter
FDAR	=	Rear axle brake disks
FDAV	=	Front axle brake disks
F.R.	=	Exhaust filter
P.	=	Gear pump
P.D.	=	Hydraulic powered steering
P.F.	=	Brake pump
PI	=	Connection to hydrostatic pump
PI (G)	=	G connection of hydrostatic pump
R.	=	Oil tank
S.	=	Brake oil tank
VCLR	=	Slow-fast control cylinder
VSLR	=	Slow-fast selector valve

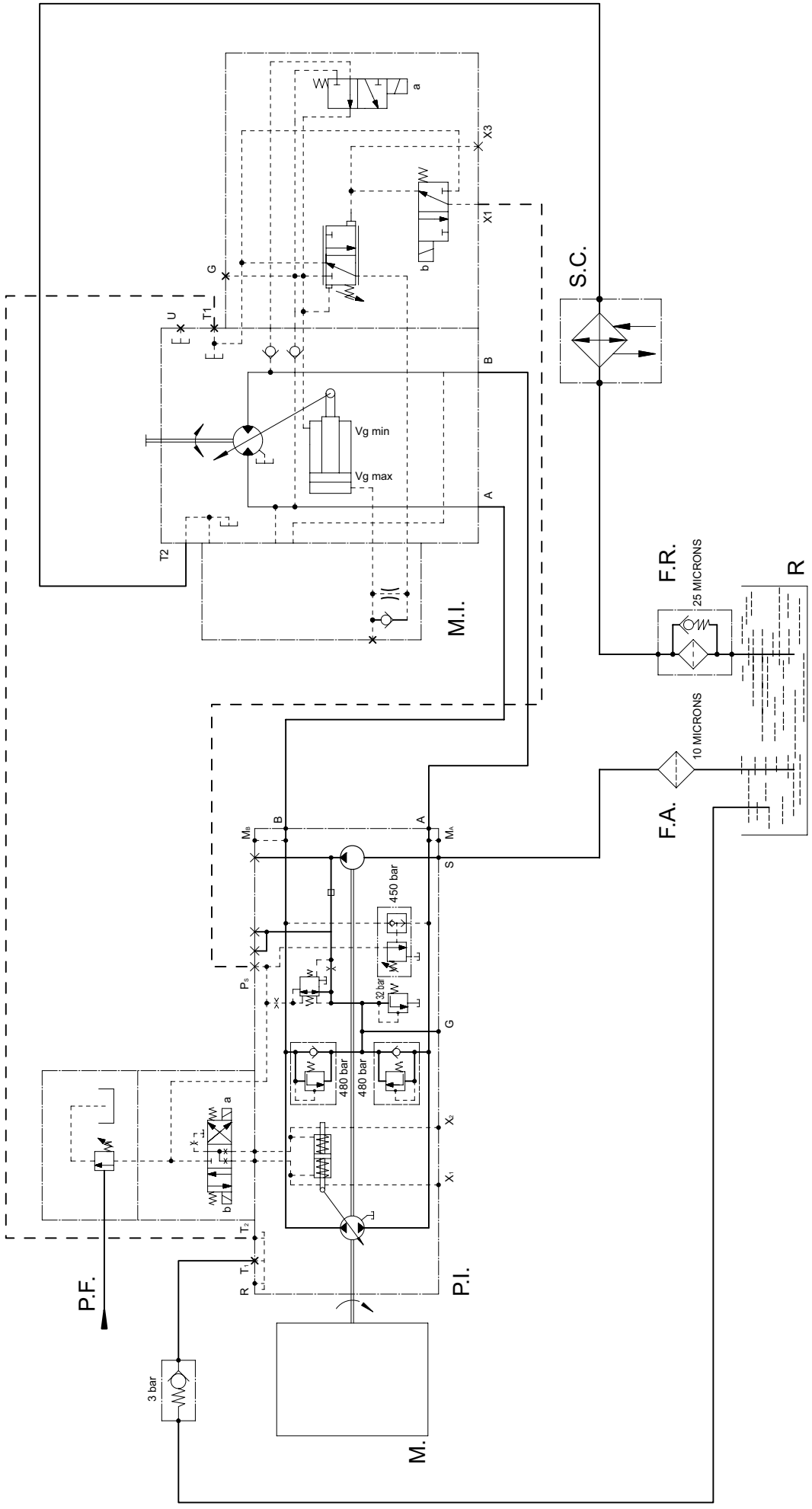
FANS HYDRAULIC SYSTEM LAYOUT



LEGEND - FANS HYDRAULIC SYSTEM LAYOUT

F.A.	=	Intake filter
F.R.	=	Exhaust filter
M.	=	I.C. engine
M.V.R.A.	=	Water radiator fan motor
M.V.R.O.	=	Oil radiator fan motor
P.V.D.	=	Double fan pump
R.	=	Oil tank

HYDROSTATIC TRANSMISSION SYSTEM LAYOUT



LEGEND – HYDROSTATIC TRANSMISSION SYSTEM LAYOUT

EEM	=	Manipulator exclusion solenoid valve
EFS	=	Parking brake solenoid valve
F.A.	=	Intake filter
F.R.	=	Exhaust filter
M.	=	I.C. engine
M.I.	=	Hydrostatic motor
P.F.	=	Brake pump
P.I.	=	Hydrostatic pump
PI (G)	=	G connection of hydrostatic pump
S.C.	=	Radiator
R.	=	Oil tank
VSLR	=	Slow-fast speed selector valve

5 - OPTIONAL ATTACHMENTS FOR USE WITH THE RANGE

TABLE OF CONTENTS

INTRODUCTION 4-5

PICKING UP THE ATTACHMENTS 4-6

INTRODUCTION

- Your lift truck must be used with interchangeable equipment. These items are called: ATTACHMENTS.

- A wide range of attachments, specially designed and perfectly suitable for your lift truck is available and guaranteed by MANITOU.

- The attachments are delivered with a load chart concerning your lift truck. The operator's manual and the load chart should be kept in the places provided in the lift truck. For standard attachments, their use is governed by the instructions contained on this notice.

- Some particular uses require the adaptation of the attachment which is not provided in the price-listed options. Optional solutions exist, consult your dealer.

All attachments with a suspended load (winch, crane jib, crane jib with winch, hook, etc.) MUST be used with a lift truck equipped with a hydraulic movement cut-out device. In this case, the movement cut-out must be switched on and the transverse attitude perfectly horizontal.

Only attachments approved by MANITOU are to be used on our lift trucks (see: 4 - ADAPTABLE ATTACHMENTS IN OPTION ON THE RANGE: TECHNICAL SPECIFICATIONS OF ATTACHMENTS). The manufacturer's liability will be denied in case of modification or of attachment adaptation carried out without his knowing it.

Depending on their size, certain attachments may, when the boom is lowered and retracted, come into contact with the front tyres and cause damage to them, if reverse tilt is activated in the forward tilt direction. TO REMOVE THIS RISK, EXTEND THE TELESCOPE TO A SUFFICIENT EXTENT FOR THE PARTICULAR LIFT TRUCK AND ATTACHMENT SO THAT THIS CONTACT IS NOT POSSIBLE.

Maximum loads are defined by the capacity of a lift truck taking account of the attachment's mass and centre of gravity. In the event of the attachment having less capacity than the lift truck, never exceed this limit.

PICKING UP THE ATTACHMENTS

A - ATTACHMENT WITHOUT HYDRAULICS AND HAND LOCKING DEVICE

TAKING UP AN ATTACHMENT

- Ensure that the attachment is in a position facilitating the locking to the carriage. If it is not correctly oriented, take the necessary precautions in order to move it safely.
- Check that the locking pin and the clip are in position in the bracket (fig. A).
- Place the lift truck with the boom fully lowered in front of and parallel to the attachment, tilt the carriage forwards (fig. B).
- Bring the carriage under the locking tube of the attachment, slightly lift the boom, incline the carriage backwards in order to position the attachment (fig. C).
- Lift the attachment off the ground to facilitate locking.

HAND LOCKING

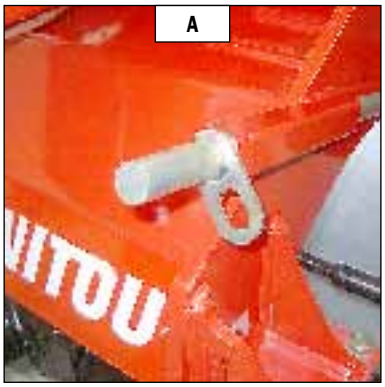
- Take the locking pin and the clip on the bracket (fig. A) and lock the attachment (fig. D). Do not forget to refit the clip.

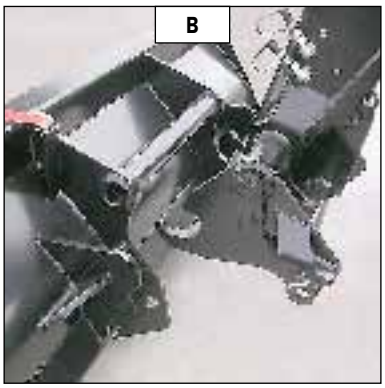
HAND RELEASING

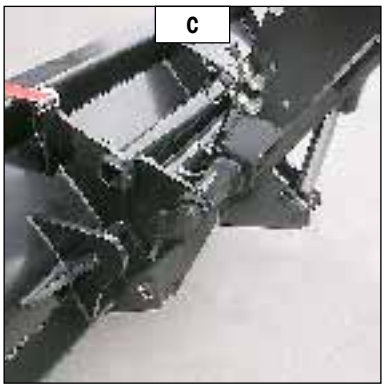
- Proceed in the reverse order of paragraph HAND LOCKING while making sure you put back the locking pin and the clip in the bracket (fig. A).

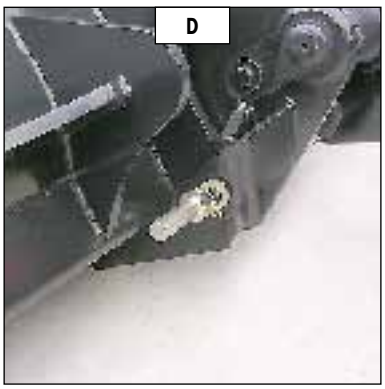
LAYING AN ATTACHMENT

- Proceed in the reverse order of paragraph TAKING UP AN ATTACHMENT while making sure you place the attachment flat on the ground and in closed position.









B - HYDRAULIC ATTACHMENT AND HAND LOCKING DEVICE

TAKING UP AN ATTACHMENT

- Ensure that the attachment is in a position facilitating the locking to the carriage. If it is not correctly oriented, take the necessary precautions in order to move it safely.
- Check that the locking pin and the clip are in position in the bracket (fig. A).
- Place the lift truck with the boom fully lowered in front of and parallel to the attachment, tilt the carriage forwards (fig. B).
- Bring the carriage under the locking tube of the attachment, slightly lift the boom, incline the carriage backwards in order to position the attachment (fig. C).
- Lift the attachment off the ground to facilitate locking.

MANUAL LOCKING AND CONNECTION OF THE ATTACHMENT

- Take the locking pin and the clip on the bracket (fig. A) and lock the attachment (fig. D). Do not forget to refit the clip.
- Stop the I.C. engine and keep the ignition on the lift truck.
- Remove the pressure of the hydraulic circuit by operating switch 1 (fig. E) on the distributor lever backwards and forwards 4 or 5 times.
- Connect the rapid connectors according to the logic of the attachment's hydraulic movements.

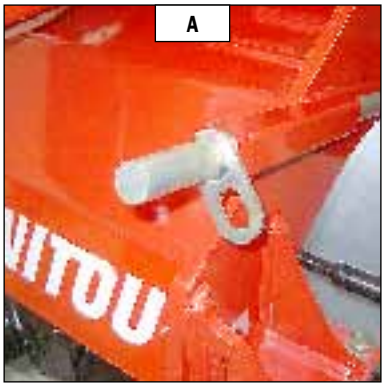
Make sure that the rapid connectors are clean and protect the holes which are not used, with the caps provided.

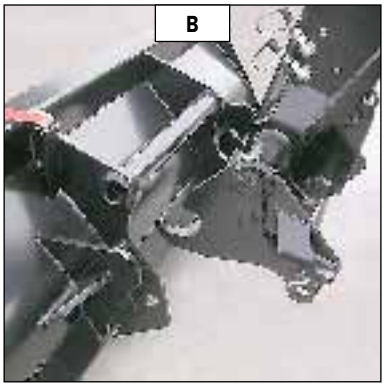
HAND RELEASING AND DISCONNECTING THE ATTACHMENT

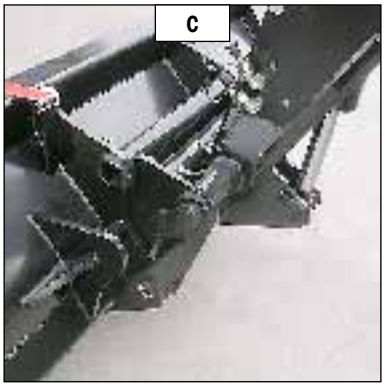
- Proceed in the opposite order to that described in MANUAL LOCKING AND CONNECTION OF THE ATTACHMENT while making sure you put the locking pin back into the bracket (fig. A).

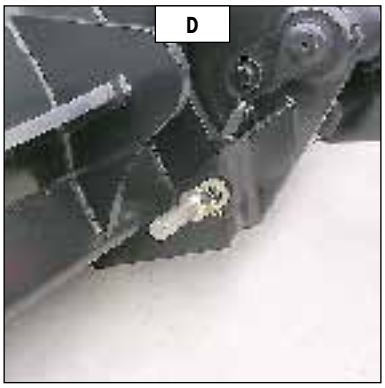
LAYING AN ATTACHMENT

- Proceed in the reverse order of paragraph TAKING UP AN ATTACHMENT while making sure you place the attachment flat on the ground and in closed position.



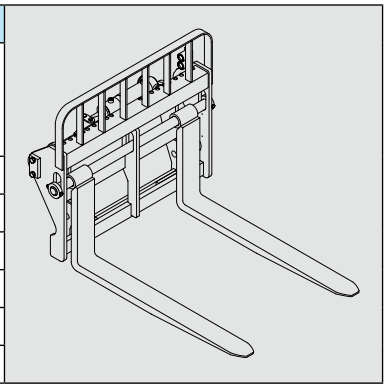




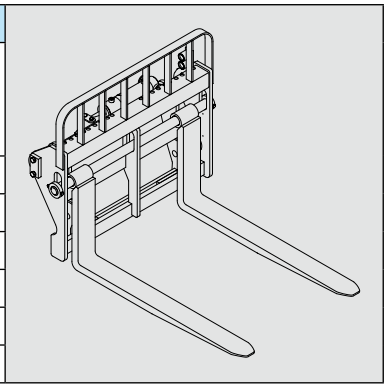


TECHNICAL SPECIFICATIONS OF ATTACHMENTS

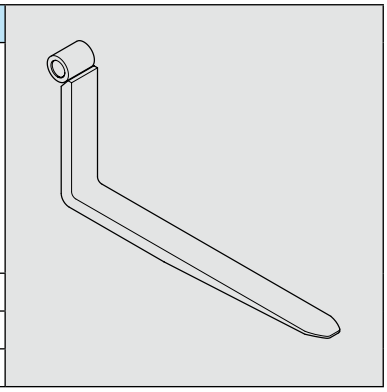
FLOATING FORK CARRIAGE			
MHT 780 HT-E3- MHT 860 LT-E3-			
	PF FLOTT / L 1430		
PART NUMBER	**504280**		
Rated capacity	7500 kg		
Width	1430 mm		
Weight	565 kg		



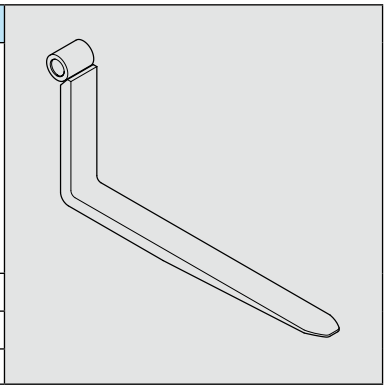
FLOATING FORK CARRIAGE			
MHT 950 LT-E3			
	PF FLOTT / L 1030		
PART NUMBER	**576018**		
Rated capacity	499 kg		
Width	1040 mm		
Weight	455 kg		

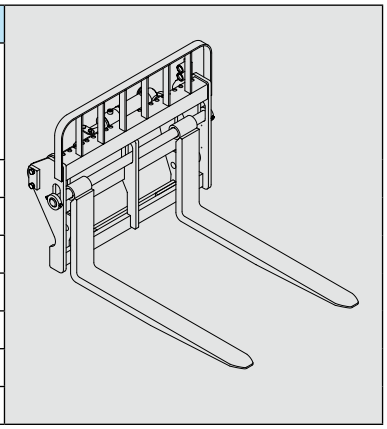


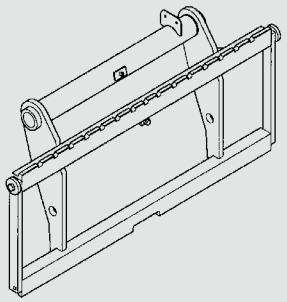
FLOATING FORK			
MHT 780 HT-E3- MHT 860 LT-E3-			
PART NUMBER	**528083**		
Section	200x60x1200 mm		
Weight	80 kg		

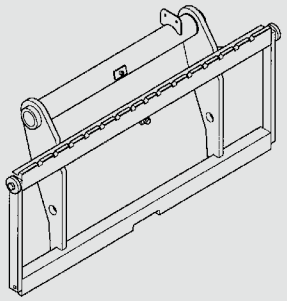


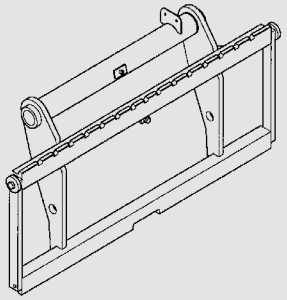
FLOATING FORK			
MHT 950 LT-E3			
PART NUMBER	**576017**		
Section	150x60x1200 mm		
Weight	80 kg		

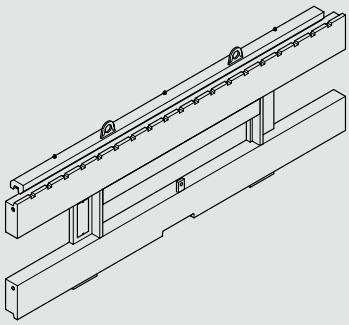


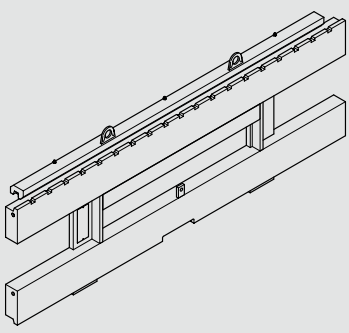
FLOATING FORK SIDE-SHIFT CARRIAGE + FLOATING FORK				
MHT 780 HT-E3- MHT 860 LT-E3- -				
	PFF + TDL FL0TT / L2230			
PART NUMBER	**744331**			
Rated capacity	6500 kg			
Side-shift	470-2150 mm			
Width	1040 mm			
Section	200x60x1500 mm			
Weight	1470 kg			

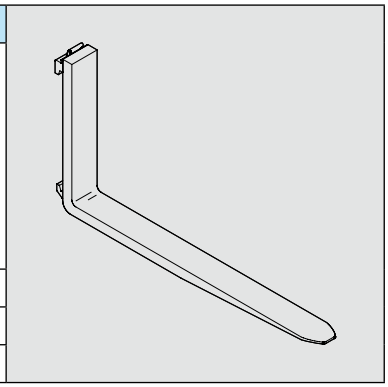
STANDARDISED TILTING FORK CARRIAGE				
-MHT 780 HT-E3- MHT 860 LT-E3-				
	PF FEM 3 / L1750			
PART NUMBER	**504107**			
Rated capacity	7500 kg			
Width	1750 mm			
Weight	850 kg			

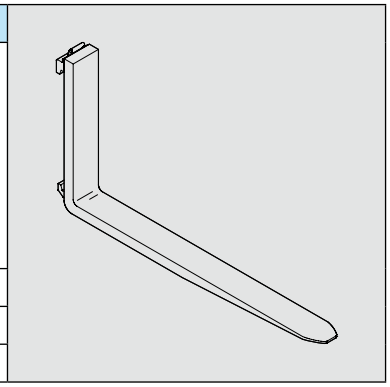
STANDARDISED TILTING FORK CARRIAGE				
-MHT 780 HT-E3-				
	PF FEM 3 / L1600	**PF FEM 3 / L2000**		
PART NUMBER	**509250**	**527216**		
Rated capacity	7500 kg	7500 kg		
Width	1800 mm	2050 mm		
Weight	850 kg	980 kg		

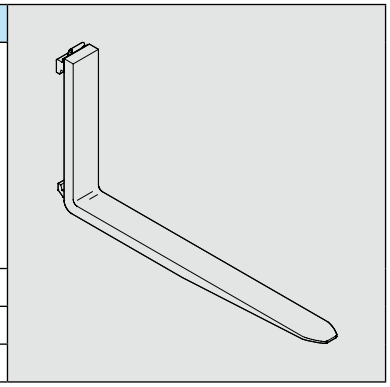
STANDARDISED TILTING FORK CARRIAGE				
MHT 950 LT-E3-				
	PF FEM 3 / L1320			
PART NUMBER	**500083**			
Rated capacity	4999 kg			
Width	1400 mm			
Weight	340 kg			

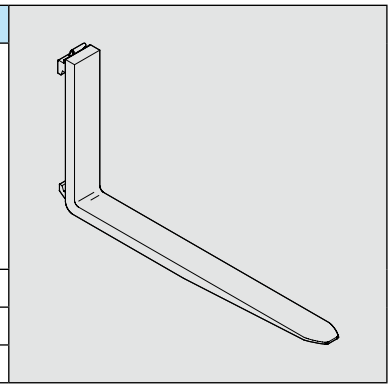
STANDARDISED SIDE-SHIFT CARRIAGE				
-MHT 780 HT-E3- MHT 860 LT-E3-				
	TDL FEM 3 / L1750	**TDL FEM 3 / L2000**		
PART NUMBER	**504365**	**566531**		
Rated capacity	7500 kg	7500 kg		
Side-shift	2x100 mm	2x100 mm		
Width	1800 mm	2050 mm		
Weight	1130 kg	1260 kg		

STANDARDISED SIDE-SHIFT CARRIAGE				
MHT 950 LT-E3				
	TDL FEM 3 / L1320			
PART NUMBER	**773802**			
Rated capacity	4999 kg			
Side-shift	2x100 mm			
Width	1320 mm			
Weight	490 kg			

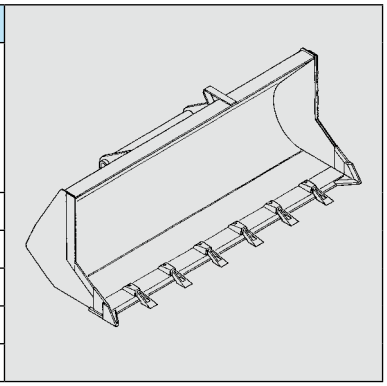
STANDARDISED FORK				
MHT 780 HT-E3- MHT 860 LT-E3-				
PART NUMBER	**513110**			
Section	200x60x1200 mm			
Weight	165 kg			

STANDARDISED FORK				
MHT 860 LT-E3- -				
PART NUMBER	**567203**	**719101**		
Section	200x60x1500 mm	200x60x1800 mm		
Weight	195 kg	240 kg		

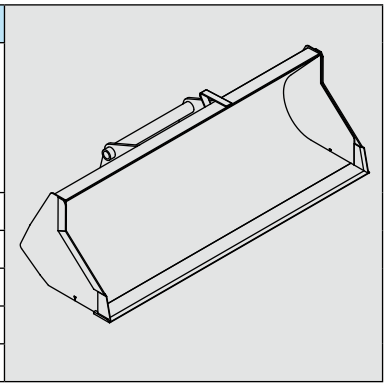
STANDARDISED FORK				
MHT 860 LT-E3- -				
PART NUMBER	**586267**	**731591**		
Section	200x60x2000 mm	200x60x2200 mm		
Weight	246 kg	270 kg		

STANDARDISED FORK				
MHT 950 LT-E3- -				
PART NUMBER	**578097**			
Section	200x60x2200 mm			
Weight	104 kg			

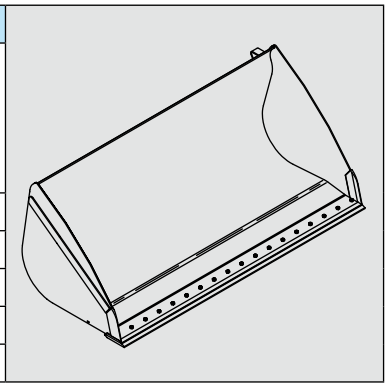
BUILDING BUCKET			
-MHT 780 HT-E3- MHT 860 LT-E3- MHT 950 LT-E3			
	CBC 1000 L2500	**CBC 1500 L2500**	
PART NUMBER	**744049**	**744045**	
Rated capacity	1000 l	1500 l	
Width	2500 mm	2500 mm	
Weight	616 kg	704 kg	



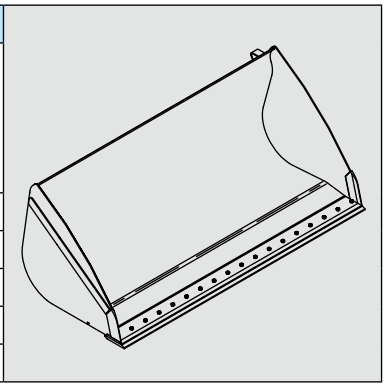
LOADING BUCKET			
-MHT 780 HT-E3- MHT 860 LT-E3- MHT 950 LT-E3			
	CBR 1000 L2500	**CBR 1500 L2500**	
PART NUMBER	**744050**	**732625**	
Rated capacity	1000 l	1500 l	
Width	2500 mm	2500 mm	
Weight	690 kg	775 kg	



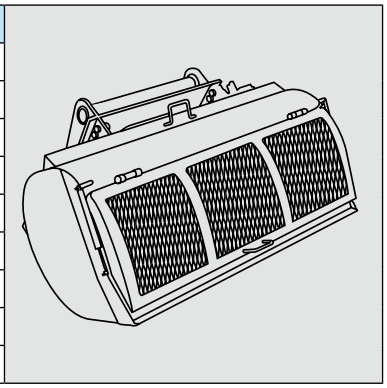
GRAIN BUCKET (REVERSING AND DISMOUNTABLE CUTTING EDGE)			
-MHT 780 HT-E3-			
	CBA 4000 L2500		
PART NUMBER	**775995**		
Rated capacity	4000 l		
Width	2500 mm		
Weight	1040 kg		



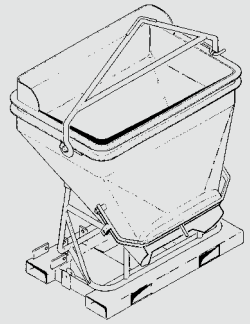
GRAIN BUCKET (REVERSING AND DISMOUNTABLE CUTTING EDGE)			
-MHT 780 HT-E3- MHT 860 LT-E3- MHT 950 LT-E3			
	CBA 2000 L2500	**CBA 3000 L2500**	
PART NUMBER	**744046**	**744047**	
Rated capacity	2000 l	3000 l	
Width	2500 mm	2500 mm	
Weight	716 kg	868 kg	



MIXER BUCKET			
	MIX 350	**MIX 500**	**MIX 750**
PART NUMBER	**576942**	**577114**	**577116**
Rated capacity	350 l	500 l	750 l
Width	540 kg	540 kg	540 kg
Weight			



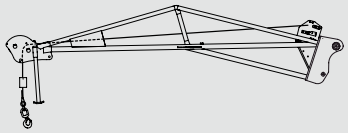
SPOUT BUCKET (ADAPTABLE ON FORKS)			
	GL 600 S2	**GL 800 S2**	
PART NUMBER	**174373**	**174374**	
Rated capacity	600 l/1320 kg	800 l/1760 kg	
Width	280 kg	310 kg	
Weight			
HYDRAULIC KIT TO OPEN THE SPOUT			
PART NUMBER	**202747**		



CRANE JIB WITH WINCH

MUST be used with a lift truck equipped with an operational hydraulic movement cut-out device.

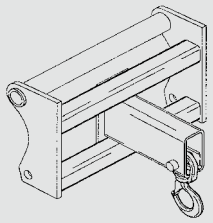
	PT 600		
PART NUMBER	**711170**		
Rated capacity	600 kg		
Weight	320 kg		



CRANE JIB MHT 780 HT-E3 / MHT 860 LT-E3- / MHT 950 LT-E3-

MUST be used with a lift truck equipped with an operational hydraulic movement cut-out device.

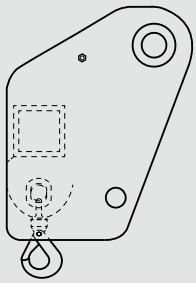
	PC 30	PC 40	PC 50
PART NUMBER	**708552**	**708553**	**708544**
Rated capacity	3000 kg	4000 kg	5000 kg
Weight	120 kg	120 kg	120 kg



CRANE JIB MHT 780 HT-E3 / MHT 860 LT-E3-

MUST be used with a lift truck equipped with an operational hydraulic movement cut-out device.

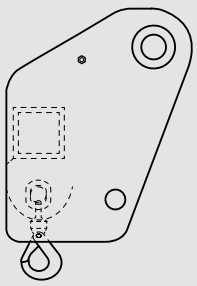
	PC 60		
PART NUMBER	**736921**		
Rated capacity	6000 kg		
Weight	130 kg		



CRANE JIB MHT 780 HT-E3

MUST be used with a lift truck equipped with an operational hydraulic movement cut-out device.

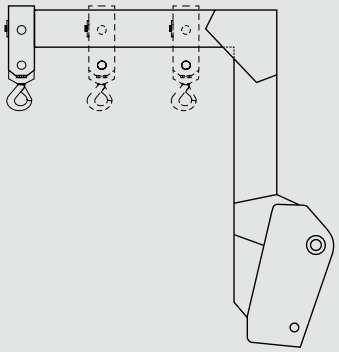
	PC 75		
PART NUMBER	**587556**		
Rated capacity	7500 kg		
Weight	130 kg		



JIB WITH SWAN-NECK HOOK MHT 860 LT-E3 / MHT 950 LT-E3-

MUST be used with a lift truck equipped with an operational hydraulic movement cut-out device.

	PCR		
PART NUMBER	**569548**		
Rated capacity	2000/3000/4000kg		
Weight	260 kg		



JIB WITH SWAN-NECK HOOK MHT 860 LT-E3 / MHT 950 LT-E3-

MUST be used with a lift truck equipped with an operational hydraulic movement cut-out device.

	PCRB		
PART NUMBER	**673697**		
Rated capacity	2000/3000/4000		
Weight	230 kg